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JOURNAL OF THE INSTITUTE OF INTERNAL AUDITORS

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THE INTERNAL AUDITOR JOINS THE MANAGEMENT TEAM — V. Z. BRINK

APPLICATION OF D.P.E. IN THE OFFICE — E. C. R. WILLIAMS AND D. J. BAILEY

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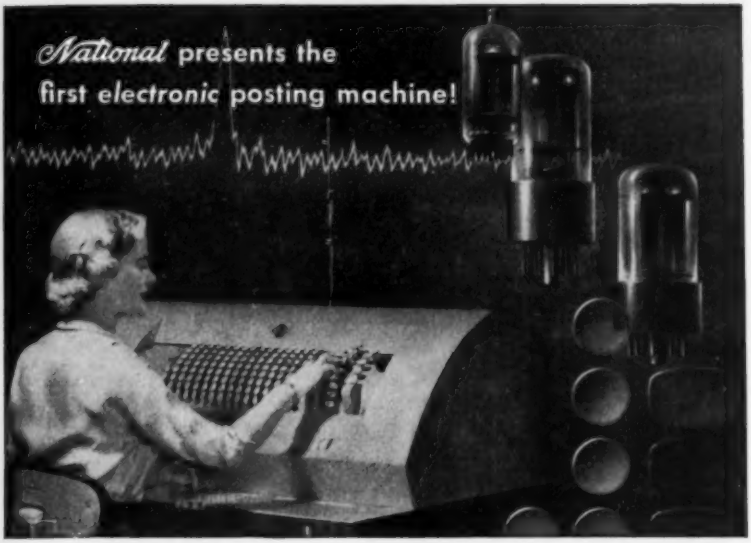

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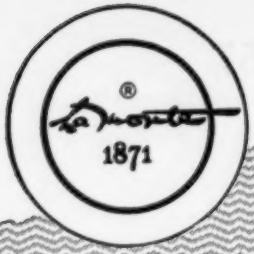

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The Internal Auditor

JOURNAL OF

THE INSTITUTE OF INTERNAL AUDITORS

VOL. 14 JUNE, 1957 No. 2

THE PRESIDENT'S PAGE

DURING the past several years, I have had the pleasant experience of meeting with and speaking to the membership of widely separated chapters, ranging from the East to the Far West and extending to the South and Southwest. It was encouraging indeed to feel the enthusiasm and to note the fine leadership in these chapters. There is no doubt in my mind that so long as this happy condition continues and is further fostered, we shall have a strong Institute. This self-evident, but nevertheless important, thought is being emphasized during the 1957-1958 Institute year by the theme adopted at our Annual Conference in Los Angeles, "Strong Chapters Make a Strong Institute."

The importance of having strong and active chapters was high-lighted by the recent "Report of the Organizational Review Committee" in its discussion of chapter administration, pointing out the paramount importance of good chapter programs. The Report stated that "the chapter will flourish and with it the International Institute only if there is a continued high qualitative character of leadership at the local level."

While each chapter is responsible for its own administration, there is no doubt that the International Organization can be of increased assistance to chapters, especially in respect to programs. The establishment of an international membership and program committee, with the vice-president as chairman, should go far toward developing a promotional viewpoint in expanding and publicizing the opportunities and services of the Institute.

While it is of first importance that our presently established chapters should be maintained in a constant state of good health, the promotion of the Institute's progress will also be served by the formation of new chapters, both in the United States and abroad. The international flavor of our Institute was enhanced by the establishment this year of a new chapter in Mexico City. It is hoped that the expansion of the Institute into Latin America, so well started by the Caracas and now the Mexico chapters, will continue. At a later date, I expect to be able to report to you in respect to my impressions of the status of internal auditing in Europe, such as I may gain from attendance in September of the Seventh International Accountants Congress at Amsterdam and visits to the London and Scandinavian Chapters.

W. R. DAVIES

THE INTERNAL AUDITOR JOINS THE MANAGEMENT TEAM*

By VICTOR Z. BRINK

Executive Assistant to the Vice-President and General Manager, Lincoln Division
Ford Motor Company, Dearborn, Mich.

The value of the internal auditor to his business depends on his ability to perform his task as a member of management. The author, whose penetrating thought and philosophy has been an important foundation of the profession's progress, reviews recent developments in auditing concepts and provides some practical hints to the internal auditor for developing his management viewpoint.

WHEN I first began my collegiate studies back in the early twenties, one of the first subjects with which I was concerned was "Beginning Accounting." I well remember the book we used as it was written by a person who was later to become a very good friend—Professor Roy B. Kester of Columbia University. The title of the book was "Principles of Accounting—Theory and Practice." I mention it now because the caption, "Theory and Practice" stands for a kind of approach which is equally sound today. I therefore propose to use it in connection with my presently assigned topic, "The Internal Auditor Joins the Management Team." I think it will provide a good basis for organizing my comments relative to this subject, which has been and will continue to be so important to the members of the internal auditing profession.

As a beginning, however, it is always useful to take at least a quick look backward. In theory the internal auditing function has always existed to some extent—even when we have a one-man operation. In this case there are, of course, no separate internal auditors but the proprietor himself carries out certain types of inquiry, review, and appraisal which are the same as if they were carried out by separate persons. Gradually, however, as a business grows, there is the increasing delegation—first on a part-time basis and later on a full-time basis—of these internal auditing activities.

*Delivered at the Southwest Regional Conference, THE INSTITUTE OF INTERNAL AUDITORS, New Orleans, La.

In these early days the actual applications of these delegations—the practice phase of internal auditing—involved predominantly the clerical or routine aspects of the operations of the business. There was also a major emphasis on finding of errors and fraud. These applications hardly had the stature to generally characterize internal auditors as being part of the management team—this despite the fact that there are always the isolated cases where I am sure that the internal auditor even then did importantly contribute in a direct manner as a member of the management team.

The developments since those early days have been essentially an extension of the breadth and depth of the internal auditing role. The major aspect of this development has been the growth in the size and complexity of the modern business enterprise, although an important further cause has been the acceptance of these increased responsibilities by the internal auditor and the related increase in his own competence. As a result the internal auditor has been joining the management team through all these years. The progress along this line has truly been dramatic—involving, for example, the development and growth of this great professional association—THE INSTITUTE OF INTERNAL AUDITORS. And we still have a long way to go, although the end objective is now more clear. Our job then is to determine how we can best assure that direction and give it increased substance.

THE THEORY BASIS

There exists today a substantial literature which in various ways interprets the theory of internal auditing and its role as a member of the management team. One of the most authoritative statements—and certainly the most compact—is the one contained in the "Statement of the Responsibilities of the Internal Auditor" developed by our INSTITUTE in 1947 and which is now, as you know, being revised. An examination of the two versions of this statement may, therefore, well provide the basis for our theory considerations. It will also provide in an excellent manner to point up the major direction in the trend of management participation theory.*

The original 1947 Statement described the nature of internal auditing and its over-all objective as follows:

> Internal auditing is the independent appraisal activity within an organization for the review of the accounting, financial, and other operations as a basis for protective and constructive service to management. It is a type of control which functions by measuring and evaluating the effectiveness of other types of control. It deals primarily with accounting and financial matters but it may also properly deal with matters of an operating nature.

*In this paper the reference to the revised statement is to the suggested draft presently being reviewed by the Chapters. The current draft may, of course, undergo further revision before its finalization and official release.

The over-all objective of internal auditing is to assist management in achieving the most efficient administration of the operations of the organization.

The revised statement has covered this same ground as follows:

Internal auditing is an independent appraisal activity within an organization for the review of accounting, financial *and other operations* as a basis for service to management. It is a managerial control, which functions by measuring and evaluating the effectiveness of other controls.

The over-all objective of internal auditing is to assist all members of management in discharging their responsibilities with maximum efficiency, by furnishing them with objective analyses, appraisals and pertinent comments concerning the activities reviewed. Hence the internal auditor should be concerned with *any phase of business activity* wherein he can be of service to management—subject only to his own competence to appraise the particular matters under review.

It is clear that the substance of these two statements is essentially the same—the major difference being that of a further extension in the breadth of the internal auditor's role. More specifically the earlier statement emphasized the *primary* role of the internal auditor in connection with accounting and financial matters and the *permissive* role with respect to matters of an operating nature. The revised statement on the other hand makes no such distinction and specifically opens the door on an *equal* basis to *all* aspects of the operations of the business. The revised statement does, however, add the very proper qualification that the internal auditor must have enough competence in the various operating areas to make his findings and conclusions sound and useful.

A second major area of the two statements concern the activities carried out to support the over-all objective. In the 1947 statement the activities were grouped in relation to the protective and constructive sub-objectives, as follows:

1. The protection of the interests of the organization, including the pointing out of existing deficiencies to provide a basis for appropriate corrective action.

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Mr. Brink was one of the founders of THE INSTITUTE OF INTERNAL AUDITORS *and served as its president for the 1950-51 term.*

The attainment of this objective involves such activities of the internal auditor as:

a. Ascertaining the degree of reliability of accounting and statistical data developed within the organization.

b. Ascertaining the extent to which company assets are properly accounted for and safeguarded from losses of all kinds.

c. Ascertaining the extent of compliance with established policies, plans, and procedures.

2. The furtherance of the interests of the organization, including the recommendations of changes for the improvement of the various phases of the operations:

The attainment of this objective involves such activities of the internal auditor as:

a. Reviewing and appraising the policies and plans of the organization in the light of the related data and other evidence.

b. Reviewing and appraising the internal records and procedures of the organization in terms of their adequacy and effectiveness.

c. Reviewing and appraising performances under the policies, plans and procedures.

The revised statement properly eliminates the two groupings and combines them, as follows:

a. Ascertaining the degree of reliability of accounting and other data developed within the organization.

b. Ascertaining the extent to which company assets are accounted for, and safeguarded from losses of all kinds.

c. Reviewing and appraising the soundness, adequacy and application of financial and operating controls.

d. Ascertaining the extent of compliance with management policies, plans and procedures.

e. Appraising performance under the established policies, plans and procedures.

Here also the major change beyond the combined and more simplified grouping is the direct inclusion on an equal basis of "financial and operating controls" for review and appraisal.

SCOPE AND AUTHORITY

As to Scope and Authority there has been no change but they are repeated here because they involve basic cornerstones of the theory of internal auditing.

Internal auditing is a staff or advisory function rather than a line or operating function. Therefore the internal auditor does not exercise direct authority over other persons in the organization.

The internal auditor should be free to review and appraise policies, plans and procedures, but his review and appraisal does not in any way relieve other persons in the organization of the primary responsibilities assigned to them.

Finally, we have the matter of independence. This was covered in the 1947 statement, as follows:

Independence is basic to the effectiveness of the internal auditing program. This independence has two major aspects, as follows:

1. The head of the internal auditing department should be made responsible to an officer of sufficient rank in the organization as will assure adequate consideration and action on the findings or recommendations. The organizational status of the internal auditor and the support accorded to him by management are major determinants of the range and value of the services which management will obtain from the internal auditing function.
2. Internal auditing should not include responsibilities for procedures which are essentially a part of the regular operations of a complete and adequate accounting system or of a properly organized operating department. In some instances management may assign current operating responsibilities to the internal auditing department, but in such cases the execution of the current operating responsibilities should be performed by separate personnel and be subjected to the same review and appraisal as is accorded other operations.

The revised version, in turn, deals with this area, as follows:

Independence is basic to the effectiveness of the internal auditing program. This independence has three major aspects:

1. The organizational status of the internal auditor and the support accorded to him by management are major determinants of the range and value of the services which management will obtain from the internal auditing function. The head of the internal auditing department, therefore, should be made responsible to an officer of sufficient rank in the organization as will assure an effective scope of operations, and adequate consideration and action on the findings or recommendations made by him.
2. Internal auditing should not include responsibilities for devising and installing procedures which are essentially a part of the regular

operations of a complete and adequate accounting system or of a properly organized operating department.

3. Since complete objectivity is basic to the audit function, internal auditors should not prepare records, or engage in other activities, which at a later date they will be expected to review and appraise.

It will be seen that there is no real change in basic principles or theory. The major differences are that no specific recognition is given to the situation where an internal auditing organization is in fact assigned current operating responsibilities—on the basis presumably that this is a matter of practice rather than theory— and the specific prohibition as to the carrying out of systems work.

Looking at the Statements as a whole, it would appear that the major change has been to eliminate the previous emphasis on accounting and financial matters and to extend the sphere of the internal auditor's role to all matters relative to the operations of the business. This is, of course, a major development of internal auditing theory and it sets the stage for a full scale participation of the internal auditor as a member of the management team. Perhaps, therefore, we can justifiably say that this important milestone is a proper basis for a new and more vigorous reaffirmation of our topic—"The Internal Auditor Joins the Management Team."

THE APPLICATION OF PRACTICE

We have dealt with the theory basis of our profession—a basic foundation for effective internal auditing. The final end-product of service to management must, however, come through the application of the theory to real problems—what we commonly refer to as the practice of internal auditing. Obviously nothing else matters unless we advance beyond the theory stage and produce definite and worthwhile results in the world of everyday affairs.

It should, of course, be recognized that really effective practice cannot exist without a sound theory basis. But effective practice requires a great deal more. It requires the judgment of evaluating specific conditions which are always different in some respect, never exactly predictable, and always involving new problems. Our companies develop new products, they adopt new manufacturing and merchandising methods, new technical developments are introduced, and last but not least, people are ever changing. Consider, for example, such developments as the new plastics in product planning, the far reaching effects of electronic equipment, and the new resources of atomic power. Consider also the developments in mass merchandising, the new modes of living, and the expansion of markets through increased purchasing power.

All this means that practice involves the continuous adjustment to these new and changing conditions—the balancing of judgments as to the many conflicting factors. One solution sounds very attractive but in another respect it may involve substantial penalties. The proposed action has an impact in another direction—perhaps setting in motion an additional chain of reactions. Hence all factors must be balanced and alternative courses of action evaluated. Frequently long-term advantages must prevail as against short-term advantages. Frequently also good theory must be compromised to some extent because of other possible gains. In making all of these judgment evaluations the internal auditor calls upon his basic theory but combines it with his store of experiences which he interprets and applies to the then existing problem. This ability to make sound judgments is without question the most important measure of effective practice.

But again we may in a way be dealing with the theory side of effective practice. What we need to do is to break down the elements of effective practice in such a manner that we can deal with them individually and thus endeavor to positively increase our over-all effectiveness. Our particular approach at this time is from the point of view of the internal auditor as a part of the management team. The development of "Economies Through Internal Controls"—the theme of this conference—is of course a part of effective practice and, while our present interest includes this, it goes further. It is an approach in which I have been interested for some twenty-five years—first as an internal auditor and later as either a teacher or as one who has dealt closely with internal auditors. Out of this background I will endeavor to organize what I consider to be the essential areas which contribute to effective participation by the internal auditor as a member of the management team.

First of all we must assume that the internal auditor has basic professional competence. What we exactly mean by the term "competence" is not, however, entirely clear. It surely includes technical competence in an accounting and financial control sense. It normally also includes other skills of a technical nature which will vary considerably as between individuals. It must in addition include the ability to organize one's thinking, to create, to reason in a logical manner, to be imaginative, and to be sensitive to observations and findings. Further, it must include the ability to communicate—both in writing and in speech—so that ideas and related information can be effectively and persuasively transmitted to others. And finally it includes the ability to work with people, without which there can be no over-all competence in this modern world.

JOINING THE MANAGEMENT TEAM

Assuming reasonable basic competence along the lines just summarized, our next concern is how the internal auditor in a real sense joins

the management team. By real sense, incidentally, I mean actually participating in management activity and positively contributing in a constructive manner to the solution of significant management problems—thus going very much further than the mere furnishing of data which may be utilized by management or carrying on activities which are in accordance with management direction. This leads us quite naturally to an understanding of what we mean by management and what it is in which we seek participation.

Here, too, the concept is not nearly so simple as it might appear on the surface. One could define the role of management as that of managing a business to make a profit, but this still leaves a great deal to be said. Or we might go a step further and say that management involves the bringing together of human and material resources and administering them in such a manner as to yield a satisfactory profit—all within the framework of existing social and legal standards. If you would care to go further, I recommend to you Peter Drucker's recent book, "The Practice of Management" which covers this subject in an excellent manner and which I am certain you would find stimulating and generally worthwhile. But in any event, the management objectives of a particular management must be projected in more specific terms beyond the more general framework and that, of course, is what each of us must be concerned with in our own individual company situation. In my own company, this projection includes, for example, the objective of market leadership over Chevrolet by Ford and in the case of my own division, it involves the objective of leadership of Lincoln over Cadillac—in both cases to be coupled, of course, with the objective of obtaining a proper profit return on the assets employed.

There is, however, still another aspect of management understanding which I should like to cover. This is that the members of the management team comprise a group of managers who are knit together through the understanding of the total goal of the business and who function with common purpose toward the attainment of that goal. Each manager, of course, has his own specific objectives and goals but they are contributory to the accomplishment of the total goal. Each manager has a primary responsibility to do his part of the total job in an effective manner; he has also a secondary responsibility to understand the separate goals of the other managers and to assist in every way practicable to help in the attainment of those goals, recognizing that the total over-all goal is thus best assured. The internal auditor must, of course, both understand that all of this is going on throughout the management team and also that he as a member must be subject to the same requirements. Thus, he, too, must set up his objectives in terms of contribution to the total goals and he must understand the objec-

tives of the other members of the team and be prepared to assist in their achievement as required.

The management understanding of the type outlined above expresses itself in several major directions. First of all, it means that the actions of the internal auditor and his staff in dealing with other company components should be tempered in such a way as to always seek to maximize the over-all company benefit. Secondly, it should reflect itself in a better management of his own organization. More specifically this means that the internal auditor must demonstrate his own managerial ability by effectively managing his own staff. This includes the selection of the right kind of people, the adequate training of them and effective supervision. It includes, also, the providing of leadership and establishment of good morale, the providing of opportunities for growth in responsibility and increased compensation—whether within the internal auditing group or elsewhere in the company—and the creation of respect and loyalty.

THE ANNUAL PROGRAM

In normal circumstances the major work of the internal auditor will revolve around his annual program—his periodic examination of given company locations or other specific audit features. This audit work falls into three typical categories—the field work, the report, and subsequent interpretation or follow-up, each of which has its specific management participation aspects. The first phase—the field work, of course, ordinarily involves contacts primarily with the working personnel of the company, although it also frequently requires contact with management executives of considerable responsibility. Even at this stage the internal auditor and his staff by their mode of operation have an excellent opportunity to demonstrate management understanding and stature. A good example is a constructive as opposed to a punitive approach. Another example is the breadth and long run perspective, demonstrated in the discussion of particular problems arising during the audit. Important also is the need of alertness to findings which may have potential management interest.

THE WRITTEN REPORT

The next major phase of the audit work involves the written report. The makeup and general substance of this document constitutes a major testimonial of whether the internal auditor is or is not a member of the management team. Here is the opportunity to select and deal with audit findings and conclusions in such a way as to demonstrate that only matters of significance are treated and that the manner of handling reflects management understanding. At this stage the internal auditor has the unique opportunity to look at facts and issues in an objective manner and to interpret or to appraise interpretations in a way which is bound to be of management interest.

The later interpretation or follow-up of the reports is singled out here because it offers a further special opportunity to work with management personnel and to demonstrate the contribution which can be made by the internal auditor. If the internal auditor has set the stage properly in his report, it is a very real possibility that he will be asked to join in conferences where the action to be taken in respect to the problem involved is being discussed. In this way he is truly participating in management deliberations and is truly joining the management team. It is opportunities of this type also which enable the alert internal auditor to deepen his understanding of the factors which bear on particular problems and to be able to direct his further auditing activities more intelligently. Such opportunities do not come overnight but they develop gradually as the internal auditor wins the respect and confidence of his associates and principals.

Developments of the type outlined above lead frequently to what is commonly referred to as the special assignment. In a given management problem it may well develop that some further facts or appraisals are needed which must be particularly well developed and also be completely objective. If the internal auditor has through his previous work established the right kind of confidence, he is a likely candidate for the special audit assignment. In this connection, management must conclude that the findings of the internal auditor will be especially useful and secondly, that the assignment will be carried out in a high level manner which will not disrupt other important relationships within the company. In other cases, the issue may involve the conflicting interests of several organizational components, and the internal auditor, because of his independence, conducts the only activity which can assure the impartiality which all parties properly demand.

Before I close I should like to deal briefly with the common allegation by an occasional internal auditor that the scope of his contribution is restricted in his company situation because of poor organizational status, inadequate budgets, or lack of management support. There is no question that such obstacles do exist in varying degrees in individual situations. I submit, however, that there is a great temptation to use such an approach as an alibi for one's inertia or inadequacy. First of all, the obstacles may be exaggerated and secondly, and most important, it is the magnitude and complexity of obstacles which provide the opportunities to demonstrate our real worth. It is surprising what can be done if one works hard enough at solving the particular problem and is patient enough to work at it long enough. Moreover, I am convinced that each management executive wants the contribution of the internal auditor once he understands what is being offered and can be satisfied that he can have it without alienating people in the organization on which he must rely for current operations.

CONCLUSION

In closing we may well remind ourselves of the truth that changing conditions with their related complexities set the stage for potential contributions, and that we create our own stature by our ability to perceive the possibilities of contribution to the solution of the new needs. In this sense the future of the internal auditor as a member of the management team is clearly up to himself. THE INSTITUTE's theme for the current year, "Earning Our Opportunity," expresses exactly this same thought. It follows also that there is not and should not be any restriction on the areas to which the internal auditor can bring a worthwhile contribution. The day is past when the areas of internal auditing service can be limited to accounting matters.

It is more than clear that the internal auditor has a unique opportunity to fill an important need and that what is most needed is courage, imagination and energy. Our greatest progress comes, of course, from assuming increasing responsibilities and extending our contribution through the broadened satisfaction of management needs. We must, therefore, continue our efforts to maximize our management contribution and to earn our place as a full fledged partner in the management team. The progress we have made to date is ample proof that we will do so to a greater and greater extent over the years ahead.

* * *

Editor's Note.—After Mr. Brink's article was submitted, a further revision of the Statement of Responsibilities was prepared, which incorporated suggestions of chapters and individual members. There was, however, no charge in essential philosophy.

The revised Statement was submitted for approval to the Board of Directors of THE INSTITUTE OF INTERNAL AUDITORS at a meeting in Los Angeles on May 30, 1957.

APPLICATION OF DATA-PROCESSING EQUIPMENT IN THE OFFICE*

Some Internal Audit Implications

By E. C. R. WILLIAMS and D. J. BAILEY

Electronic data-processing equipment has no conscience, collusion comes naturally to it, and it can perpetrate immense frauds and cover them up—if instructed to do so. How should the author protect against these risks? The matter is considered comprehensively in this keenly analytical paper.

A. THE PROBLEM WHICH MANAGEMENT FACES

MANAGEMENT is continually faced with the need to consider new methods of processing, in every field, and the processing of clerical data is no exception. Management decisions have to be made about the adoption of any new method after giving due thought to the questions:

1. Is this going to give *a better answer* than has hitherto been achieved? In the case of clerical data, consideration has to be given to the accuracy of the answer, and the effect of mistakes on good relations with third parties (*e.g.* customers), and on management time (which is costly) spent on eradicating the consequences of such mistakes. In other cases, however, increased accuracy may not be required and thus, from this point of view, the new process would have nothing to offer.
2. Is this going to give *a quicker answer* than before? And is this increased speed going to bring an equivalent improvement in management control?
3. Is this going to give *more data* than was available before, which will be helpful to management and improve their control?
4. Is this going to *reduce cost* overall? Or, alternatively, is any increase in cost going to be justified by any or all of (1), (2) and (3)?

Currently, management is having to consider whether to install electronic data-processing equipment. Equipment of widely varying applications and capacities is being offered by a number of manufacturers, and some large businesses already have equipment in operation, though many of their applications are largely in the experimental stage. We are not considering in

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this article the implications of the questions mentioned above, but presume that these have been satisfactorily answered, and a decision made to install equipment. In the light of such a decision, auditors have to be ready for the problems arising from the installation. These are our preliminary ideas, but we well realize that they may need modification, and other ideas will strike us, as we gain user experience of the equipment.

B. THE EFFECT ON COMMERCIAL ROUTINES

A general consideration of office procedures and methods suggests that the introduction of electronic data-processing equipment into the office will be felt in these ways.

1. Accounting and Clerical Work

The fundamentals of sort, summarize, reproduce, and file will still, of course, be evident, but in changed forms. There is a school of thought which suggests that the new developments are merely an extension of a fully integrated machine setup, using existing electro-mechanical equipment, and that therefore the internal auditor does not face any serious new problems.

This viewpoint, however, seems to overlook two very important features of electronic equipment:

a. Data can be stored electronically or magnetically in a variety of ways. The storage capacity is very extensive, and is used not only for holding data temporarily during processing and calculations, but may also provide the file of semi-permanent data, *e.g.* customer's accounts, stores inventory, personal records. Moreover, the equipment is able to read and store, when required, a very comprehensive program of instructions, any of which it can systematically alter or modify, on a basis incorporated in the program, without human intervention.

b. The equipment can carry out simple logical operations. These are based on the comparison of two quantities (*e.g.* two separate calculated results, or a calculated result and a pre-set standard) and the

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selection of one of two courses depending on the result of the comparison. Clearly, the principle is to subtract one quantity from the other, and examine the answer to see if it is positive or negative; the program indicates which instruction is to be followed next for either of these results. An important application of this function is that if the appropriate management criteria have been stored in the equipment, it will print out only exceptional results, instead of tabulating full statistical information.

Three main effects follow from these features:

a. Electronic data-processing equipment can cover ground which on existing electro-mechanical equipment may have to be split into stages, the results from one stage constituting all or part of the initial data for the next stage. The best use of the facilities of electronic data processing equipment is made where such intermediate results are held in the equipment, and eliminated when no longer required, and only the final result, in the form required, is produced from the initial data.

b. Semi-permanent data, recorded magnetically, cannot be read visually, in the way that data punched on cards (or even on paper tape) may be read. Moreover, at present, random access to data stored magnetically is relatively slow, and may compare unfavourably with the time taken to obtain recorded data in a manual filing system, where this is not too extensive.

c. The presentation for management study only of data calling for decision or corrective action by management not only considerably reduces machine time in printing out, but reduces reading time for management; and therefore probably means that management can be enabled to review the operations over a wider field or from new angles. Of course, the success of this application depends on the proper selection of criteria in the first instance.

2. Clerical Handling

As suggested in the preceding paragraphs, clerical handling should be restricted to:

a. Preparing the initial data in a form that is suitable for the equipment. This may be an extensive operation at present, however, involving the punching of cards or tape via a keyboard, though, of course, current 'pre-punching' or 'mark-sensing' routines can be used. The initial data may have to be sorted by hand before punching, or, alternatively, in the case of cards, sorted mechanically before feeding to the equipment. Sorting can be done electronically, but generally it is not an economical use of machine time.

b. Clearing the processed and finished results from the equipment, and routing them onwards or filing them as required.

3. Supervision and Control

In addition to the clerical staff required for this handling there will be the following personnel associated with the operation of the equipment:

Manager: to control the staff, arrange shifts, detail the running times, machine loading and availability, etc., and generally plan for the best use of the equipment.

Programmers: to devise and prepare the routines for the equipment to produce the results required from the data provided. This covers the development of the system, and the detailing of the system using the appropriate code.

Machine operator: to feed in programs and data, to run the equipment, and to deal with stoppages. The size and complexity of the operations processed may call for a separate supervisor to handle queries.

Engineer: to carry out routine servicing, to maintain the equipment in proper running order, and to be on immediate call during operations.

4. Fraud and Error

The equipment cannot be guilty of fraudulent intent, and will do precisely what it is programmed to do. Electronic faults can, of course, cause error, but equipment design and servicing routines have reduced these to a minimum, and those that do occur are normally easily recognizable.

On the other hand, the severe reduction in clerical handling (other than the preparation of initial data) limits the possibilities of applying the conventional controls on error or fraud by inter-stage checking by several clerks, while, of course, the use of the equipment reduces, to some extent, the need for such controls.

Note: *Future Development:* It is worth remarking at this stage that the two main problems indicated in the preceding paragraphs are:

1. The preparation of the initial data (program and information) in a form which the machine understands, which usually involves copying the original documents by some form of keyboard operation.
2. The delay in finding at random data which is stored on a magnetic file.

Both these problems are receiving the attention of designers, and it is reasonable to expect that satisfactory solutions will be found in the form of:

1. Scanning devices that will 'read' original documents—these documents, however, would need careful and consistent preparation.

2. Random access memory chambers, of huge storage capacity, which provide immediate input and output.

C. THE EFFECT ON INTERNAL CONTROLS

When we look at this impact of electronic data-processing equipment from the internal control angle, we have to keep in mind three important qualifications about internal controls:

1. The extent to which such control is imposed depends on how much it will cost in relation to what it will achieve.
2. No internal control can be exactly evaluated or measured, nor is there one right method only in any particular set of circumstances.
3. The efficacy of any control depends to some degree on human abilities and is adversely affected by human weaknesses.

Depending on the importance of each of these qualifications in any situation, we may expect to find the following manifestations of 'internal control,' in varying degrees, in the conventional office routine:

1. Control of the accuracy and recording of initial data, and of its summarizing and reproduction. This includes the approval of transactions by officials to whom proper authority has been delegated.
2. Firmly laid down procedures which incorporate the necessary checks, are flexible enough to legislate for all possible contingencies and are properly carried out.
3. Division of duties and responsibilities among employees. (This would normally form part of the procedure.)
4. Intelligent human scrutiny of documents and accounting records, and approval of intermediate results by authorized officials.
5. Analysis of results and costs, and review of the trends revealed.

Against the background of electronic data-processing equipment, there is a severe limitation of the effectiveness of (3) due to the reduction of clerical handling after the preparation of initial data for the equipment; while the elimination of intermediate results and paper is likely to impose some limitations on (4). Thus, more emphasis falls on (1), (2), and (5).

D. THE INTERNAL AUDIT APPROACH

The internal auditor, concerned as he is with the control over day-to-day operations to protect the company against irregularities, errors, waste, and other losses, and with the reliability of the information provided to management, must similarly be affected. In particular, detail checking of records between intermediate stages or separate sections of the office disappears, and such checking as is required will be confined to the proper preparation and authorization of initial data. Thereafter the auditor should be able to concentrate on an examination of procedures, and a review of the business.

Further thoughts on these three aspects follow:

1. Detail Checking

The only paper retained on file should be initial documents and final results for any operation, and the linking stages should have been 'lost'—therefore, no stage-to-stage checking is possible. As alternatives, the final answer from a sample of the initial documents can be worked out by 'pen and ink' methods, or by applying an audit-prepared program to process the selected data on the equipment. The results obtained can be compared with the final results on file. The use of the equipment for such test checks, of course, presupposes that internal audit will be allocated some machine time. On the other hand, there may be some virtue in the fact that the extremely high speed of the equipment will allow a much wider test to be made than at present possible.

It is questionable, however, whether there is much virtue in attempting to apply a historical check to an operation carried out, some months past, by electronic data-processing equipment. The main object of detail checking, from the internal auditor's point of view, is to enable him to satisfy himself that the internal controls are being properly applied. The program constitutes the procedure and incorporates the internal control, and the equipment will, of course, precisely follow the program—no programmed steps will be omitted or overlooked, as may be possible in a manually operated procedure. We can, moreover, accept that the equipment does not make mistakes which are not detected, because the design of the equipment incorporates built-in checks, and a properly prepared program should incorporate further checks to minimize calculation and transfer error within the equipment. Thus, while the auditor can be sure that the internal controls incorporated in the program are properly *applied,* the responsibility remains for him to ensure that the program is properly *prepared.* This may call for an independent test check of results produced by the equipment.

Any auditor must, of course, satisfy himself that the accounts presented are a fair representation of the operations of the business, while the internal auditor particularly is concerned with a critical review of the commercial results.

These approaches are covered in the next paragraphs.

2. Internal Controls

Electronic data-processing equipment carries out operations

a. detailed in the program fed to the equipment;
b. on data held on main records fed to the equipment (or held in the equipment);

c. in accordance with new data fed to the equipment;
it then

d. produces results in the form required;

e. amends the main records and stores them in the form used in (b).

The auditor must satisfy himself that

a. the program, which constitutes the 'system,' is sound and economical while incorporating the essential control features; and, further, that whenever that routine is operated, the official program is used (and not a modified one excluding an essential control feature);

b. the main records are not falsified, intentionally or otherwise. These are usually held magnetically on tape or other devices, and can only be altered by machine operation. These records may, however, consist of a punched-card file;

c. the new data fed to the equipment conforms with the initial authorized documents;

d. the program, main records, and new data, once fed into and stored within the equipment, are not falsified by manual intervention in any way.

It is in the field of the examination of internal controls that the internal auditor is likely to have to modify his approach the most, and we have, therefore, dealt with this separately in section E below.

3. Commercial Review

The main implication of electronic data-processing equipment, therefore, is that the internal auditor will have far less directly checkable data at his disposal. Having satisfied himself that procedures and controls are adequate by an examination of the routines and the programs used on the equipment, he must then consider whether the business operations of the company are on a satisfactory basis and the published records are a fair indication of these operations. This approach involves:

a. an assessment of the commercial aspects of departmental operations, with a view to suggesting possible avenues for increasing efficiency, reducing expense, or increasing revenue;

b. a critical examination of the reports and returns submitted to management and upon which management decisions are based. As mentioned above, these should make full use of the technique of reporting exceptional items only, and the auditor should satisfy himself that the criteria used are adequate, but not too restrictive;

c. a review of the functional organization of the business, and the split of work to departments and the relationship between departments.

There is nothing new in this approach for internal auditors, but there is still a tendency for it to take second place to detail checking. The effect then is likely to be that in the future the internal auditor will have to use the commercial review as his main plank in ensuring that the business is healthy, and from this point of view the arrival of electronic data-processing equipment is to be welcomed. The work that today constitutes the clerical routine of auditing will, in future, be done for the auditor, more quickly and more effectively than he can do it, by the equipment, in its normal operations.

E. THE EXAMINATION OF INTERNAL CONTROLS

The following are suggested lines along which the internal auditor may have to work when he wishes to examine the internal controls where electronic data-processing equipment is in use. It is, of course, a prerequisite that he should first familiarize himself with the system, which is represented by the program, and this may mean that he will have to have the program printed out so that he can reconstruct the flow of operations and determine the internal checks. Where a company is planning to install electronic data-processing equipment, it may well be useful for the internal auditor, not only from his own point of view, but also that of the company, to make himself familiar with the preparation of the routines and programs, even perhaps to the extent of participating in or advising on stages of the programming.

1. Control on Input

He should examine the procedure outside the equipment, dealing with the handling and verification of input. Points to look for may include:

a. supervision by a responsible person of the program library;
b. proper physical control of main records on stored punched cards;
c. correct authorization of initial documents, before processing;
d. firm routine for the verification of input data as prepared from the initial documents. Such a routine could incorporate a double preparation and automatic comparison, before feeding; and a remote printout of all data fed;
e. verification of alterations to main records, where they can only be achieved by machine operation. This is covered by proper controls of input data, machine running, and use of programs, and by programmed checks;
f. automatic printing out of date (which has been set internally) and input identification coding (included on the input media) on all output material.

Where main records are stored magnetically, he may require that sections of them be printed out, for verification.

2. Control on Operations Within the Equipment

He should examine the procedures outside the equipment, dealing with the verification of calculations and output. These include:

a. the independent preparation, by pre-list, of control totals (as for normal machine accounting routines) which can be compared with results produced by the equipment. Alternatively, with electronic data-processing equipment, such totals can be fed in for comparison within the equipment;

b. the verification of results, where possible, by over-all total controls and calculations. Again this check can be done within the equipment.

3. Internal Checks

He should examine the internal checks which form part of the routine. These will include a number of checks inherent in the design of the equipment, the main objects of which are to enable it to detect operational errors. These are covered by the general term 'built-in checks,' and are not so much the auditor's concern, though he should appreciate their existence. The other checks, with which he should be closely concerned, are 'programmed checks,' being written into the original program to provide verifications within or outside the equipment. Examples of such checks are:

a. arranging for the equipment to compare standing data currently used with that used previously, and to indicate where there have been changes; or to examine altered data to confirm that it is accompanied by an appropriate code to enable it to be passed;

b. arranging for data, as used, to be analyzed and printed out in main groups (*e.g.* number of men on each wage rate) for reconciliation with a previous analysis;

c. arranging for results outside certain pre-set reasonable limits to be printed out. (This is a variation of the earlier conception of printing out 'exceptions' which call for management decision.)

He must, therefore, be in a position to visualize the flow of operations which the program represents, and may consider it necessary to feed in problems designed to test these programmed checks—again, provided that internal audit is allocated some machine time. Alternatively, as mentioned earlier, he may consider it necessary to take a sample of initial data, and complete the calculations, independently of the equipment, for comparison with results produced by the equipment.

4. Prevention of Falsification of Records in the Equipment

The possibility of manual intervention has to be considered in the light of the design of the equipment. Such intervention could be of two categories,

affecting: (a) program; (b) data; both of which would call for a thorough knowledge of how the equipment operates, and either the manipulation of switches which are normally the responsibility of the engineer (though some larger American machines include a typewriter keyboard on the control console for the specific purpose of allowing the operator to enter data to the equipment), or the introduction of an additional piece of program. The latter possibility should be adequately covered by the controls on input material mentioned above, while the former would hold up the routine running of the equipment. Above all, however, unless the person who attempts to falsify material in the equipment is completely familiar with its design, mode of operation, built-in checks, and the programmed checks, the equipment is very likely to detect and report the alteration, particularly in the case of any attempt to alter the program. Even if this does not occur, and the equipment accepts the altered program and/or data, a scrutiny of the resultant output from the operation, in conjunction with the authorized input data, may well indicate that alterations have taken place.

With regard to equipment running and holdups, it is normal practice for all such operations to be logged by the operator. This record can, of course, itself be falsified, but on the other hand, after a period of running established programs, intelligent scrutiny of the log book may show unusual timings which perhaps suggest unauthorized stoppages or intervention by the operator. There is no reason why some form of automatic recorder should not be built into the equipment, to be compared independently with the operator's log.

5. Snap Checks

It is possible that the principle used in surprise counts of cash, stocks, and other valuables at present may have something to offer to management and auditors where electronic data-processing equipment is used. Such snap checks of the current position on the equipment could include a verification of the program in operation, and possibly the monitoring of internally stored material. To the extent that this may involve holding up the operation of the equipment, it is not a desirable practice. But, following the point mentioned in the previous paragraph, there may be a case for surprise verifications of the entries in the log book.

6. Organization and Division of Duties

Although it was suggested earlier that there is likely to be a severe limitation of the effectiveness of control by the division of duties and responsibilities among employees, due to the reduction in clerical handling, this control feature must not be ignored. The questions of falsification of data prior to feeding to the equipment, and falsification of records in the equip-

ment, must be considered in the light of whether the individual who is in a position to make alterations from which he can derive benefit is also in a position to understand and interpret the data as presented for processing, and to grasp all the implications arising from or associated with such alterations—which would seem to call for a detailed knowledge of the program. The functions of management, programming, and machine operation, therefore, offer sufficient scope for the division of essential duties and responsibilities, and the internal auditor should scrutinize this aspect of the organization, which can still constitute a most important element of control.

F. THE PERSONAL REQUIREMENTS FOR AN INTERNAL AUDITOR

It only remains to consider what sort of a person the internal auditor should be in this brave new electronic office. The answer is simple—he should be all he is now, plus a little something. That something is not so easy to define, however. It can, perhaps, be defined in two ways—first, by exception. He does *not* need to be an expert in mathematics, physics, or electronic techniques. Secondly, by analogy. When radar was put into the hands of the troops in the early days of the last war, those on the fringe tended to regard it with an excessive respect amounting to awe, an atmosphere in which the operators revelled, and which they did everything to stimulate by airily tossing out bits of often meaningless jargon, and describing with lurid detail the brain-storms suffered on courses by those who just failed to aspire to genius. In time, of course, radar came to be accepted as just another, albeit very, very useful, piece of equipment.

There are indications of a similar attitude in the business world today with regard to electronic data-processing equipment. Those in the know have certainly produced the jargon, while those on the fringe do seem to be a little scared of the potentialities, and show a dangerous tendency to accept without due consideration what the experts tell them about the equipment. It behooves the auditor, therefore, to educate himself to the stage where he is familiar enough with the techniques, designs and types of electronic data-processing equipment and the way in which they are programmed, to enable him to recognize their potentialities and their limitations without fear but, above all, without prejudice. And he should appreciate, particularly, that just as electronic data-processing equipment will carry out accurately, quickly, and satisfactorily, any office routine which it is programmed to do, so it will, with equal satisfaction, and quite happily, perpetrate immense frauds, if a human operator is in a position to tell it to do so, and to cover up for it. The point is that the equipment lacks a conscience, and therefore, collusion comes naturally to it.

AUDITING OF CONSTRUCTION COSTS*

By WILLIAM L. DOWD
General Auditor, Minnesota & Ontario Paper Co.

The present marked upturn in capital expenditures is a characteristic phenomenon of the present boom economy. It imposes upon the internal auditor the obligation to give careful consideration to his approach in this particular area. The author of this article provides an interesting case study of his company's capital expenditure practices and the techniques employed by the internal audit staff.

INTRODUCTION

DURING the past decade, many companies have spent what were previously unheard of sums for plant maintenance, expansion, and improvements. My company, the Minnesota and Ontario Paper Company, has been no exception. We are not a large company in comparison to some nor are we small, having expended, during this post-war period, approximately fifty-five millions of dollars, with contemplated expenditures during the next few years in the vicinity of thirty millions more.

This spending spree by industry has been brought about by several causes, starting with changeovers from war to peacetime production, doing necessary maintenance and repair work which had been postponed because of the lack of materials and/or labor, catching up on normal modernizations halted during the war years, meeting present-day demands both for additional production and new products, striving for lower costs and more efficiency, and ending with the present economic aspects of the future. Your companies, as well as mine, will undoubtedly expend many more dollars in the years to come.

Before decisions are made for any large scale spending for plant expansion and improvement, much long term planning is necessary in which attempts are made to project future earnings. This is done from an analysis of past experience, from extensive market research, and from a plan or variety of plans for future operations. All of this necessitates much detailed work and thinking by personnel at every level of the organization and is so involved that I will not dwell upon it at this time.

*Delivered to Twin Cities Chapter of THE INSTITUTE OF INTERNAL AUDITORS.

The money for such expenditures must come from the sale of additional equity capital, from retained profits, or from borrowing. In our case, it is a combination of the latter two, but, regardless of the source, it is logical that this spending must be rigidly controlled. Whether or not the internal auditor participated in initiating the controls, he must appraise them for possible weaknesses and insure that they are functioning as intended.

COMPANY PROCEDURES

To begin with, the internal auditor must have a thorough understanding of the established policies and procedures within his own company, so before telling you what we do, I should like to outline for you the controls and procedures in effect within our organization; not that ours is a unique company in any way or that we feel that we have accomplished the ideal, but because these same controls and procedures have been most effective and could be applicable to any organization. Whether you were working on a one-year plan, a three-year plan or a five-year plan would be incidental to the procedures involved.

Early in the fall preceding any given year, the management of each mill location prepares and submits a plan of recommended capital and expense project expenditures, which are felt to be needed for the coming year if production and quality is to be maintained in accordance with expectations. These are reviewed by the vice-president in charge of operations and, after adjustments, are finally submitted to top management for approval.

Based on the previously mentioned forecast, determination is made of approximately the amount of funds which will be available for capital improvements. From the plans submitted, this amount is then further allocated into four categories or programs: (1) annual facilities (those items which are estimated to cost less than $15,000 each), (2) major facilities (those items estimated to cost more than $15,000 each), (3) annual logging facilities (all items of a capital nature required in the logging division only), and (4) a sum for the acquisition of timber as it becomes available.

Individual "Requests for expenditures" (R.F.E.s) originate, for the most part, from the various plant supervisory personnel through the medium of the resident engineer, thence on to the chief engineer and approving authorities.

Accompanying the request must be all data, including an estimate sheet, bid proposal, bill of materials, blueprints, specifications, and, last but not least, the reasons for the expenditure. If the reason given is to effect savings, an increased profit, or for extension or improvement to existing facilities, wherein the return is intangible but which expenditure is considered beneficial or necessary for the manufacture of new or improved products, then

a performance report should be forthcoming and the R.F.E. should indicate the length of time, after installation, required for its submittal. You may be sure that the reasons indicated are weighed very carefully before approval is given.

Approvals of R.F.E.s are obtained in the form of an "Authority for expenditure" (A.F.E.s) and require the following final approvals: Individual project expenditures estimated to cost more than $15,000 must have approval of the board of directors. Individual project expenditures estimated to cost less than $15,000 require the approval of the president. The president in turn has authorized the vice-president in charge of operations to approve all projects estimated to cost $2,000 or less. It might be stated here that all expenditures of a capital nature, no matter how large or small, must have an authority for expenditure. Certain expense projects also must have an A.F.E.

Many people within the organization are vitally interested in the amount of authorized expenditures, the progress that has been made on projects and the amounts committed, etc. One in particular is our facilities reporting officer. One of his responsibilities is the standardization and co-ordination of records of authority and expenditures. To accomplish this, he works in close cooperation with the chief engineer, the treasurer, the plant accountants, the purchasing department, and the head office property accountant. He also makes periodic on-the-spot inspections as the work progresses. He is required to issue reports monthly, or oftener when necessary, to top management detailing the aforementioned information along with estimates of expenditure and time to complete a project. He is obliged to direct attention to significant differences between estimated and actual results and, where necessary, to ascertain that authorized extensions to A.F.E.s are initiated. (Expenditures overrunning the estimate by 5% or $2,000, whichever is greater, requires an A.F.E. extension.) It is also his responsibility to see that performance reports are forthcoming when indicated, and these become a part of his monthly report.

When A.F.E.s are issued, they show all pertinent data such as whether the expenditure is for an addition, a replacement, or an improvement, any associated A.F.E., retirement, sale, salvage, accounting instructions and so forth, and these are distributed to all persons concerned. A.F.E.s are

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assigned numbers in sequence, which indicate the plant and department affected and the type of expenditure. As an illustration, the sulphite department at our International Falls plant has been assigned the number "50." The first A.F.E. issued for a capital expenditure in this department would by "50C1," the "50" indicating the sulphite department, the "C" indicating a capital expenditure, and the "1" indicating the numerical sequence. An A.F.E. issued for an expense expenditure would have the "C" replaced by an "E."

When the A.F.E. is received by the resident engineer, a plant engineer (usually the one who made the original drawings and estimate) is assigned to follow the project to its completion and work orders are originated to accumulate the costs. The number of work orders issued against an individual A.F.E. would depend upon the size and nature of the project and the breakdown of costs required. Work orders have the same numbers as the related A.F.E. Taking the previously mentioned example of A.F.E. number "50C1," the first work order would be numbered "50C1-1," the second one "50C1-2," and so on in accordance with the number of work orders issued.

Work order ledgers are maintained at the various plant locations by plant accountants who work in close co-ordination with the engineers. All charges of labor and material affecting work orders are cleared through the plant accountants and are accumulated by them in the work order ledgers, segregated by work order and further as to capital or expense expenditures. These ledgers must clear at the end of each month; this clearance is made by journal voucher either to the general ledger account "Construction in process" or to the applicable expense account. As work orders are completed, the engineer in charge issues a "work closing order" indicating that no further labor or material charges are to be requisitioned or honored. When all work orders applicable to a specified A.F.E. have been completed and all charges received, "Completion notice" is prepared by the plant accountant which shows all costs and other pertinent data.

When the head office property accountant receives his copy of the "Completion notice," the costs which have been accumulated against the A.F.E. in the "Construction in process" account are checked to the costs as shown on the "Completion notice" and, if found to be in agreement, this amount is transferred to the designated property account by journal voucher. On projects which are quite large and where the plant accountant has indicated on his journal voucher that the property is physically complete, yet no "Completion notice" has been received, the property accountant consults with the chief engineer and the comptroller as to the advisability of segregating the costs in the property ledger so that accrual of depreciation can

begin. This is also the procedure on projects which are not totally complete physically but wherein some part of the project has been put into operation.

There are times when it is difficult to differentiate between an expenditure of a capital nature and one chargeable to expense. To reduce confusion to a minimum on border-line items, our company policy has been determined as follows:

1. A capital expenditure is made for the acquisition of additional property, the replacement of a unit of property, major maintenance or overhaul which would materially prolong the property's useful life or increase its value by making it adaptable to a different or more efficient use.
2. An expense expenditure merely restores property to an efficient operating condition, neither materially adding to its value nor prolonging its useful life.

The amount of an expenditure should have no regular bearing as to whether or not it would be capitalized as some properties require frequent and costly repair while others do not. We would seldom capitalize any property costing less than $50 unless it is of a special nature, such as laboratory equipment, office equipment, small pumps and motors, special tools, meters, etc. Items to be capitalized normally have an expectant average useful life of five years or more, except automotive equipment such as automobiles, trucks, tractors, etc., where the life span is considered to be four years. Some items of small tools, even though considered to last this minimum length of time, are treated as expenses as acquired because they are numerous, usually minor in cost, and are being constantly replaced. In your case, it may differ where small tools can represent an appreciable outlay and you may wish to maintain subsidiary records of them or take an inventory for balance sheet purposes.

If an A.F.E. indicates a replacement of present facilities, it must state if the old facility is to be held for a standby, if it is to be retired to scrap, or is to be sold. Retirements and sales require the same approvals as acquisitions of property. The request for the retirement shows the identification of the property with the original cost (if known) or an estimated cost if unknown or a part of a larger installation. This cost is determined by reference to our last appraisal record or, if the asset had been acquired subsequent to that time, the item is more readily identifiable by reference to the A.F.E. which approved its acquisition. If the property to be retired or sold has an estimated (not known) cost of $5,000 or more, additional approval is required from our valuations committee. Completion notices, etc. follow the same pattern as acquisitions.

All sales of fixed assets are charged to a "Property sales contracts" account of the general ledger, and a subsidiary record is maintained of each account. Though this account could normally be looked upon as an account receivable, because of the long term nature of the payment procedure, it is carried on the balance sheet as a non-current asset. The majority of our property sales contracts are for the sales of homes to employees or the sales of land and automotive equipment to timber producers, and payments are made on an extended term basis. Other smaller or cash sales follow this procedure mainly in an effort to standardize the procedure.

Most dismantling expense or removal costs of retired property are charged to a non-operating profit and loss account except in those cases where such expense is directly attributable to the new property being constructed. This expense is then netted against the "Gain or loss on the sale or retirement of capital assets" account.

Generally, all maintenance, repair, replacement and new construction work is done by our own mill maintenance crews and does not leave us the element of danger which is constantly present on large contractual construction. Contracts can be and are let in various forms such as: labor and material contracts or labor only contracts to be paid for on the basis of a firm bid, costs plus a fixed percentage, or costs plus a fixed fee with or without a premium being paid to the contractor for keeping costs below a fixed target.

INTERNAL AUDIT

The internal auditor's prime responsibilities are to ascertain: first, that sound accounting practices and controls have been established; second, that records and reports are reliable; and third, that established procedures are being followed. These responsibilities are not necessarily given in order of their importance but, if one is of major import, it is, in my opinion, the third responsibility of "ascertaining that established procedures are being followed." Our experience has been that, if procedures as set up by management are strictly adhered to, there is a very good chance that all else will follow in line. That is the reason why I have talked at such length on my company's procedure. It may not be the duty of the internal auditor to establish the various controls and procedures, but it is definitely his duty to appraise them and to see that they are functioning as intended.

Our internal audit department begins by setting up work paper schedules which will portray in detail all of the changes effecting the property accounts for the year. These papers, besides being part of the tools of our trade, are used extensively by our tax department and by the public accountants. From the complete file of Authorities for expenditure in the hands of the property account, we list all uncompleted A.F.E.s in existence, noting par-

ticularly the description of the work, the estimated expenditure, any associated "Authority for expenditure," "Authority for retirement," "Authority for sale," and the accounting instructions. We examine these instructions to see that they are in accord with our interpretation of company policies and determine that the A.F.E.s have been properly approved. It might be noted here that, though the general auditor is a member of our accounting committee, his accounting recommendations must be accepted by higher authority before being finalized. If a replacement has been indicated, we check for the disposition of the old facility and ascertain that an authority for retirement or sale has been approved.

On those A.F.E.s which are shown to be covered or partly covered by a contract, we secure a copy of the contract and read it carefully. If the copy of the contract cannot be kept in our possession, we make note of the contract provisions such as the amount, the method of payment, the audit provisions, what is includable in costs, equipment rental rates, etc. We next prepare subsidiary work paper schedules for detailing of all charges to work orders affecting each A.F.E.

Periodically, and in our case every two months, we visit all plants and, with our work paper schedules, go to the plant accountants and obtain their work order ledgers, material requisitions, cash vouchers, and journal vouchers affecting the work order accounts. All work order descriptions and accounts are examined, whether or not chargeable to the capital accounts, as similar controls are applicable to expense work orders and there is just as much opportunity to err in charging expense as otherwise. All charges, broken down as to our own labor, contract labor, stores material, special purchases, and contract material, are detailed in our audit work order schedules. I must digress again to explain that all material purchases made by the company, no matter for what end use, are cleared through our plant stores section and are released only upon presentation of a properly authorized withdrawal requisition which indicates what the material is to be used for. Copies of all requisitions chargeable to work orders are on file with the plant accountants. We examine all such requisitions determining, generally, whether or not the materials and quantities charged could be used on the type of work described. However, it is more the responsibility of the project engineer to examine and verify that proper materials in proper quantities are being charged to the project in question. He ascertains this by constant reference to his estimate sheet and bill of materials and must in the end explain any appreciable variations in cost.

Requisitions for materials furnished by ourselves show a stock number for items regularly stored as stock; all requisitions for special purchases of material indicate the cash voucher reference upon which the vendor was paid. We tape the requisitions to prove the total material charge and list

the cash voucher reference on special purchases. In addition, we examine the cash vouchers in the stores accounting section with its accompanying material received report. These are checked to see that materials as requisitioned are the same and the values correct, and concurrently enter the vendor's name and reference in our schedules. This satisfies us as to the authenticity of the material charges and furnishes the public accountants with the information they desire. Because of certain complications which have arisen in the past, our company endeavours, wherever practical, to purchase and furnish all materials, even on contractor jobs, but this is not always possible.

Our own labor charges are checked from the payroll journal voucher distribution and periodically our payroll auditor makes very comprehensive checks of clock cards, rates, computations, distributions, etc. Again, it is the primary responsibility of the project engineer to examine clock cards and foremen's daily reports to ascertain that his project is not being charged with more labor than received.

Outside contract labor and material charges (on a cost-plus or other basis) requires a more complicated and naturally, a more careful check. Firm bids present no particular problems, but our company demands certification from the contractor indemnifying it from any claims for liens, insurance, taxes, etc. Otherwise, stipulated in the contract, would be a clause which allows the auditors to examine the contractor's record to ascertain that all such items have been taken care of prior to final payment of the contract.

CASE STUDY

As an illustration, I would like to give you a résumé of a project presently in progress at our Kenora, Ont., mill for the installation of an additional paper machine with all of the additions to auxiliary facilities. This project is estimated to cost in the neighborhood of 17½ million dollars and the prime contract was let for the complete job on a cost-plus-a-fixed-fee basis. Controls have been established in various ways such as:

1. A revolving bank account has been set up at the contractor's home city to be used only for headquarters expenses of engineering, consulting, purchasing, etc., these services to be billed monthly to the company at cost and certified as legitimate expense by a local firm of public accountants.
2. A revolving bank account has been set up at the site of the project to cover all the contractor's fixed office payroll expense. These costs are billed to the company monthly, subject to audit by the internal auditors either before or after payment. Ours is a post-audit as we do not always have an auditor on the grounds and do not wish to

hold up payment. Here we ascertain, from personnel records and other data, that employees on the payroll are bona fide, that earnings have been properly computed, that withholding and other taxes are correctly withheld and paid, that workmen's compensation insurance charge is correct and paid, etc. One of our first checks revealed that a penalty had been paid for late filing of workmen's compensation insurance and for which the contractor was at fault, so payment was disallowed. Also included on the payroll was a cost of living allowance to certain employees, about which we had previously agreed, but upon which no withholding of earnings had been made. This had to be corrected.

3. One sub-contract was let to cover all construction labor, on a basis of cost-plus-a-fixed-fee with a proviso that the sub-contractor will participate in additional fees if the costs are held below a specified target. In this sub-contract is a listing of the type of tools he is to furnish and the rental rates on his own or rented equipment. The contract is specific as to what expense he may incur which would be reimburseable. Though the sub-contractor is strictly under the supervision and is the responsibility of the contractor, here also the internal auditors have access to the records of the sub-contractor and verify, from personnel records, clock cards, foremen's reports, cancelled checks, etc., that the payments reported on the payroll and the distribution is correct. In this instance, as in most of our contracts, contract labor rates are specified by the company. The auditor periodically accompanies the field time checker and attends pay-offs. Payroll and withholding taxes, insurance, etc., are checked to see that they are correct in amount and paid. On a previous job, a contractor received a sizeable refund on workmen's compensation insurance for which we made claim as the contract was on a cost-plus basis and we contended that any reduction of costs rightfully belonged to the company.
4. On purchases of major materials and equipment, the contractor makes all the contacts for bids, etc., and submits these to our chief engineer and executive committee with their recommendations for approval before placing any orders. As these approvals are given, they are referred to our traffic department for routing of shipments. As materials are received, the contractor has the responsibility of inspecting materials, issuing materials received reports, storing, okaying invoices and transmitting them to our voucher department for payment. All freight and express bills are submitted to our traffic department for a check of routing, rates and extensions before payment. Some items of major equipment are purchased on a firm bid erected in place and are only subject to inspection and trial before

final payment is made. Minor materials, even though collectively costing a great deal, are purchased through the contractor's local purchasing department with the approval of our purchasing department. A separate stockroom has been set up to store and control construction materials whereby practically the same procedures as our own have been set up for receiving, storing and disbursing. A control account is maintained within our own stores accounting section, to which is posted all material purchases, in dollar amounts only, chargeable to construction stores. The contractor maintains "Kardex" perpetual records on both quantities and values. At the end of each month, he furnishes us with the dollar value of all disbursements. The internal auditors periodically check the cash vouchers for authenticity of payment, extensions, discounts, f.o.b. points, material received reports, etc., and spot check materials on hand to the contractor's record. One thing in particular to watch for on a check of cash vouchers is that payment is made on only the originals of invoices and other related papers. The company was once charged for many more thousands of brick than could possibly have been contained in a building's walls. This was caused by duplicating invoices and taking cubic measurements of the walls without taking into consideration the large displacement of mortar.

We have been exceptionally fortunate on this particular project in that a representative of our purchasing department has been released to the contractor to act as his local purchasing agent and that our local plant accountant is acting as his office manager. This assures us of the utmost in cooperation between mill and contractor personnel and that procedures and controls will function as intended.

As labor and materials are expended on the job, the contractor furnishes us with a coding of the charges to be distributed to the various work orders and it is also his responsibility to give us a detailed breakdown of all costs at the completion of the work. At that time professional services, travelling expense, office and stores overhead, freight, etc., are pro-rated to the specific projects.

This particular construction program has been responsible for the dismantling, removal and relocating of some buildings and a lot of equipment and the costs of this portion of the work are to be capitalized as part of the major program. It is incumbent upon the auditor to ascertain that all work orders relating to the main objective receive the proper accounting.

As A.F.E.s are reported to be completed and charges have been authenticated, we transfer all accumulated costs from our work order schedules to our property schedules and determine that these are in agreement with

the property accountant's record and the general ledger. Comparisons are made between estimated and actual costs and, if not within the allowable variance, they are discussed with the facilities reporting officer to ascertain that corrective action is being taken.

CONCLUSION

To sum up, the multitude of detail checked by the internal auditors to assure management (1) that control procedures are being followed, (2) that reports on expenditures are factual, (3) that distributions between capital and expense are correct, and (4) that comparisons of expense and profits between periods can be relied upon, is well worth the cost. However, the high-lights of this whole subject evolve around the cost controls and procedures which have been established before starting any large project, thereby reducing the elements of danger and minimizing the internal auditors' burden.

CONTROL BY INTEGRATED DATA PROCESSING*

By W. T. HAMILTON

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The development of electronic data processing is still in its early days. Technical improvements are still coming at a rapid rate. For the internal auditor whose company is adopting or considering the adoption of these techniques, there are many new considerations to be taken into account. The author outlines not only the advantages of EDP, but also the pitfalls that must be carefully avoided.

INTRODUCTION

THE art of the skill of title determination, as it applies to speech making has been, in this instance, stretched to the utmost. To more properly describe the observations I want to make, my paper would better be entitled "Economies and Controls to be Realized Through Processing Integrated Data by Means of Electronic Data Processing Equipment and the Effect on Internal Auditing Program."

Obviously, such a title would never physically fit on a program. Too, it sounds technical and might tend to discourage potential listeners from attending the session.

Let me assure you of two things: first, my remarks will be non-technical in nature, and secondly, they will cover broader aspects than are contained in the title.

I intend to develop the extended title and cover five major items:

1. Integrated Data Processing
2. Electronic Data Processing Equipment
3. Considerations in Acquisition of a System
4. Planning
5. E.D.P. and the Auditor

INTEGRATED DATA PROCESSING

There has been a growing tendency to carelessly use the terms Integrated Data Processing, abbreviated to I.D.P., and Electronic Data Processing,

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called E.D.P., interchangeably. I think we should clearly understand the differences. Integration means the "bringing together of the several parts," in this case, of a data processing operation. It thus refers to a method of assembling data to supply information.

It involves (a) starting as closely to the original source as possible in data preparation, (b) including at the source as much information as possible and necessary to eventually provide maximum data for multiple usage, (c) minimizing the interruption of flow for any reason, and (d) extracting at the conclusion of the operation data and information reports which will provide means for better decision-making.

It can be summed up as maximum utilization of data with minimum waste. Procedures, forms and manpower are all involved. But, and this is the important point, at no time is mechanization a necessary prerequisite to integrated data processing. Naturally, mechanization of office and accounting operations has given added consideration to benefits of integration, and certainly the introduction of electronic equipment has added incentive for better integration. However, let me repeat that in the pure interpretation of the integration concept, mechanization, either by mechanical or electronic equipment, is not mandatory to data integration.

Two simple and brief examples might help prove my point. If, as part of a purchase order form, a carbon copy embodies sufficient information to permit use of the copy as a receiving record, then you have a simple example of integration. Control can be satisfied if the receiving record data must be determined independent of quantity shown on the purchase order.

A second example could be the development of a multiple part employee record form. If data reported at the point of origin could satisfy, through copies or directed flow, requirements of the personnel department, the immediate supervisor, the budget section, the employee mailing department and the telephone exchange, then integration certainly is taking place.

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Mr. Hamilton served as National President of THE INSTITUTE OF INTERNAL AUDITORS *in 1953-54 and is currently a member of the Board of Directors of that Association. Last year he was Chairman of the Organizational Review Committee of* THE INSTITUTE *directing a committee of past international presidents in the formulation of long range policy and plans. He is a member of the Edison Electric Institute, The Cleveland Chamber of Commerce and the Taxation and Finance Committee of The Cleveland Citizens League.*

What I'm suggesting is that, regardless of the presence or absence of electronic equipment, there is always the need and opportunity to further integrate the processing of business data.

ELECTRONIC DATA PROCESSING EQUIPMENT

The advent of E.D.P. has given more impetus to integration than any other single factor. The combination of integration and electronics promises more advances in the drive to hold down mounting clerical and accounting costs, to eliminate unnecessary duplication of processing services, and to provide better and faster reports on which decisions can be based.

Opportunities appear limitless, but the task will not be easy. Sylvania Electric Products, a leader in the I.D.P. and the E.D.P. field, reflects its feeling about the immensity of its problems, at least, by embarking on a five-year program to resolve the answer. Sylvania's system, integrated and electronically operated, is created and will be developed so that 71 facilities in 61 communities in 20 states are tied together by an 18,000-mile private communications network—all for the purpose of meeting management's need for operating data in time to be able to do something constructive about it.

At its Data Processing Center, a high speed computer consolidates, summarizes, and analyzes information for use by all levels of management. At the same time the system leaves each company location its independence in carrying out individual, self-contained clerical procedures, and in making policy decisions according to the decentralization principles.

The Sylvania approach would appear to answer the timely questions as to whether or not the centralization of data processing is in conflict with the modern concept of placing decision-making responsibilities at the scene of action—decentralization.

Let's spend a few minutes discussing the very current and popular subject of E.D.P. equipment. I think you will find in my next remarks some words of enthusiasm, some words of hope, some words of caution. If some of my comments appear to be critical, if they appear to be negative, they are not intended to be so. I have every positive belief that E.D.P.M. will eventually be as much a part of our day-to-day office operating routine as adding machines and typewriters are today. However, we must all approach the advent of this new concept with our eyes, ears, and particularly our minds open—open to the opportunities, open to the problems.

Immeasurable damage was done, unwittingly, I'm sure, several years ago when the "revolution in the office" was announced as "just around the corner." The trumpets and the bells announcing the coming revolution, accompanied by stories of the unlimited powers of the electronic brains, resulted in many misconceptions and wild speculations about commercial

applications of the equipment. Everyone was wont either to jump on the band-wagon, ordering equipment with absolutely no knowledge of how it would be utilized, or on the other extreme, to be unduly frightened out of all proportion to the damage this concept would do to the status quo. Time has brought a change.

Let me review briefly the make-up of an E.D.P. system. Basically a system may be considered to comprise three major segments; input, the computer itself, and output. In a system, these integral parts are interconnected in various combinations. Computers were first utilized for scientific and engineering problems, basically because the problem factors or source data could be simulated in neat consistent symbols and operands. Consistency and repetition are the backbone of efficient computer utilization. The ability to perform complex arithmetic functions was a necessity in a scientific digital machine. In commercial business applications, however, and particularly accounting, the "problem solving" took the form of arranging like items together, classifying, rearranging, writing, referring and performing simple or relatively simple arithmetic, and the computer's function becomes one of data processing rather than computation. Therefore each component of a computer system, that is, input, the computer itself, and output, became more dependent one upon the other if maximum utilization of the computer capacities was to be realized. To meet the challenge of commercial applications, the computer manufacturers have been concentrating on the development of peripheral equipment, that is input, output, and auxiliary storage devices, so that a complete series of operations, from raw data to finished product, can be performed automatically at the computer's electronic speeds.

Input data can be processed by paper or magnetic tape, punched cards, or direct keyboard entry. The larger systems utilize magnetic tape because punched card input is limited to the speeds of mechanical feeds and therefore is not compatible with the computer's internal electronic speeds. Magnetic tape, much like the tape you may use in your home recorders, can be prepared for computer processing by a device simulating a typewriter keyboard or by converting information first prepared on punched cards. I talked earlier about the incompatibility between speeds of input and output devices, and computer speeds. A series of input devices can be utilized in parallel to provide input to a large scale computer and achieve better balance. Advantages of tape as input and output media for a computer are that tape can operate at much higher speeds and requires less storage space for a given amount of information than any of the other media. One reel of magnetic tape is equivalent to three filing cabinets full of punched cards.

The computer itself is the intermediate stage. Storage or memory occurs in various types of storage devices such as magnetic drums and magnetic cores. This stage includes the operation of the computer by following the

instructions or program of how to manipulate the input data and how to arrive at and store the generated data. In this phase the arithmetic properties of the computer will be utilized. This phase is the most advanced.

Output devices include paper tape, magnetic tape or punched cards which then can be processed through a printing device if printed copy is required. Printing directly from the computer processing is becoming more a reality with the advent of high-speed printers capable of producing up to 1,200 lines per minute—a line at a time. These high-speed printers can also be utilized by a computer system which produces its results on magnetic tape. The tape can be used to activate any number of output devices, such as typewriters or printers.

Whether or not an electronic system could properly and economically find application in a business should be determined only after a comprehensive feasibility study. Even today, after years of intensive research and active development, there are many imponderables.

CONSIDERATIONS IN ACQUISITION OF A SYSTEM

Let me summarize several major advantages and disadvantages apparent today in considering acquisition of a system.

Advantages:

1. Modernized office operations.
2. Long-range savings:
   Reduced personnel liability, including supervision.
   Conservation of floor space.
3. Faster functional and financial reporting.
4. Reduced human error hazard.
5. Concentration of activities:
   Improved control.
6. Higher skilled jobs will result.

Disadvantages:

1. Experience generally very limited.
2. No system yet thoroughly and satisfactorily proven.
3. Reliance upon manufacturers considerable.
4. Time required for programming extensive—unbelievable details must be identified.
5. Few trained specialists, programmers, engineers or technicians available.
6. Company personnel problem aggravated—placement, morale, training, etc.

7. High costs during conversion with parallel systems required.
8. Realization of decreased costs not complete until excess personnel problem is resolved.
9. High rate of development of new equipment, keeping market and applications in a state of flux.

Much of the initial optimism for early acquisition and adoption of an E.D.P. system has gradually been tempered by an appreciation of the many attendant imponderables.

PLANNING

The tremendous importance of planning for E.D.P. cannot be overemphasized. Today, in my company, as elsewhere, more and more concern is shown over the need for adequate planning. Our company concept of planning, and you can see how this applies to electronic studies, is that "planning is adequate in the company when we anticipate our problems and needs, recognize our opportunities and develop in time, courses of action which will enable us to solve our problems, fulfill our needs and capitalize on our opportunities in a manner which compares favorably with the best obtainable standards."

We have recognized that certain conditions must exist if adequate planning at all levels of management is to be effected. These conditions are:

1. That each supervisor and technical specialist *believes* in the value of planning.
2. That each supervisor and specialist *understands* that adequate planning is part of his job.
3. That each supervisor and specialist *accepts* responsibility for adequate planning as part of his job.
4. That each management member *allocates the amount of time necessary* to achieve adequate planning.
5. That sound and continuous training practices in techniques of adequate planning have been *established* and that each management member has been *so trained* in these techniques that they are able to do adequate planning.
6. That there be company-wide *recognition* of the importance and need for cooperation and communication among company organizational elements to achieve adequate planning.

In our approach to getting ready for electronics we have attempted to follow these planning principles. Planning for installation of a system will have a wide impact on our company, as E.D.P. demands the best attention possible. Consideration of several external conditions over which we have

little or no control impresses us more than ever with the need for complete planning. For example,

1. Experience in the field is extremely limited.
2. No known installation so far has proved to be entirely satisfactory in its initial stages.
3. No known installation has produced the over-all savings initially estimated.
4. No known installation has resulted in the clerical reductions anticipated.
5. No known installation has permitted the meeting of schedules for programming, delivery, or conversion.
6. Claims by many relative to early solution of the input-output problem have not materialized.

These conditions should not be considered deterrents to a planning program to acquire E.D.P. Rather they should be recognized as problems to be anticipated, carefully weighed, and placed in proper perspective to the over-all objective.

E.D.P. AND THE AUDITOR

A minimum amount of direct internal auditing experience with E.D.P. precludes substantial conclusions about this phase. Suffice it to say that initial fears about an overnight revision being required in auditing objectives, approaches, and techniques have been dispelled to a considerable degree.

At the National Conference of Electric and Gas Utility Accountants in April 1956, two men, a public accountant and an internal auditor, presented papers about audit problems related to E.D.P. The public accountant made the following statements which should allay some of the fears I have heard expressed:

"The reasons for audits or the objectives of audits will not be affected to any appreciable degree by the introduction of electronic data processing equipment.

A great deal of the work which an auditor does will not be influenced to any appreciable degree by the installation of electronic data processing equipment."

The public accountant went on to say that conclusions reached during an informal discussion of the American Institute of Accountants' Committee on Electronic Accounting coincided with those included in the paper presented by the internal auditor, namely: that to date no insurmountable problems have appeared—in fact, that no problems have appeared in such

matters as checking programs or revising auditing procedures, that could not be overcome by ingenuity or by a knowledge of machine operations—and that to date there have been no major changes in audit programs themselves.

There has been an expression that emphasis on the need for control over E.D.P. operations may have resulted in an "over-control" situation—that some equipment provides more control and more detail checks than did its predecessor manual or mechanized system. As we better understand and gain confidence in the utilization of E.D.P., over-control features both in the equipment and in the system may tend to disappear.

THE INSTITUTE OF INTERNAL AUDITORS' Report on Internal Auditing and Electronic Data-Processing Machines, published in 1956, is excellent in summarizing the problems as they appear today with some of the possible solutions outlined. A major problem would appear to be the deterioration of the "audit trail" because as the use of E.D.P. progresses there will be less and less usage of intermediate data, which today provides a trail upon which transactions can be reconstructed.

CONCLUSIONS

Let me summarize first by again referring to the difference between I.D.P. and E.D.P. and to suggest that integration should be an objective at all times, in the interest of control and economy, regardless of machine application.

Second, that utilization of electronic equipment will increase and that for economy and control, E.D.P. applications offer tremendous potential for the near and more distant future.

Third, that proper planning for E.D.P. is mandatory.

Finally, that the ingenuity to be found in the internal auditing profession will overcome audit and control problems attendant to data processing at electronic speeds.

MANAGERS WANT MORE HELP

By MAX A. KENYON
Assistant Comptroller, Colgate-Palmolive Company

Business managers today are actively seeking improved controls over their companies' operations. This article, in the form of a memorandum to a company's operating managers, attempts to explain the objectives of internal auditing and how it helps the managers to improve their control techniques.

OBJECTIVE

THE goal of our internal auditing work is to help improve managerial control. Our internal auditing is a type of managerial control which functions by measuring and evaluating the effectiveness of other elements of control.

Managerial Control. Managerial control is understood to mean the process by which each manager, from the head of a small section to the company president, (1) establishes policies and procedures (2) plans what is to be accomplished (3) sets standards for measuring performance, and finally (4) sees that the plans are carried out in accordance with those policies and procedures.

Day-to-day control of operations thus requires knowing when any unit is falling behind or running ahead, and knowing when to step in and take action. To do this, each manager must know what such a unit is accomplishing compared to planned performance. Therefore both the reports of accomplishment and the standards of planned performance must be accurate and timely; more important, they must be pertinent to the range of actions each manager has authority to take in order to bring accomplishment into line with planned performance.

At each level of responsibility above the lowest, each manager has responsibility to control those who in turn control others below them.

SCOPE OF RESPONSIBILITY

Internal auditing is an advisory function. Internal auditors do not give orders.

Internal auditing activities consist of appraising the effectiveness of the various elements of managerial control, and recommending changes to make them more effective.

Internal auditors do not control. Rather, they suggest how each manager might obtain better tools to control effectively the operations for which he is responsible.

DUTY TO COMMUNICATE

Free communication of ideas, thoughts and information throughout the organization is a prime tool for effective control.

Where morale is good, much of the important work is done by personal contacts between men who trust each other, talk the same language, and share the same doctrine.

During the course of their work, internal auditors contribute directly to improved control by acting as a channel of communication among people, departments and locations.

To aid "downward" communication, for example, they help interpret the meaning of written policies, plans and procedures in terms of particular operations. In "upward" communication, they help managers understand feelings, ideas and current conditions at the operating level. Among departmental groups, they provide additional contact for better understanding of mutual problems and relationships.

APPRAISING THE CONTROL TOOLS

In carrying out their function of appraising the effectiveness of managerial control, internal auditors obviously cannot systematically observe all segments of their company's operations and compare actual performance with the pertinent policies, plans and standards. Even if this were possible, it would not provide for continuous control after the auditors had completed their review.

The practicable approach is first to evaluate the adequacy of the tools which are available to each manager, by means of which he can exercise control over his segment of the operations.

In appraising the control tools available to each individual manager, the first step is to find out what such manager's responsibilities are. For this purpose his responsibilities need to be defined, not as shown by organization charts and job descriptions, but in terms of the operating areas where he actually makes decisions (that is, chooses one of two or more alternative actions).

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A founding member of THE INSTITUTE OF INTERNAL AUDITORS, *Mr. Kenyon has served at various times as director, chairman of the editorial committee and chairman of the research committee.*

Among the various tools which managers use to exercise control, internal auditors primarily study:

1. Performance standards
2. Reports of accomplishment
3. Established procedures

Other control tools which they consider include organization structure, assignment of responsibilities, supervision and training, and channels of communication.

1. *Performance Standards*

In appraising the standards of performance available to a particular manager, internal auditors first try to identify the principal goals and yardsticks by which that manager can measure his own and his subordinates' accomplishments in the operating areas where they make the decisions. Most of these standards are often unwritten and some are not even recognized (without special study) to be performance standards.

Having identified the standards applicable to a particular decision area, internal auditors study each to see:

a. Whether it is consistent with the policies, plans, procedures and standards established at higher levels of responsibility (for example, does it support the company-wide profit budget as most recently revised?);
b. Whether it is realistic in relation to possible performance;
c. Whether the units of measurement are those commonly used to measure actual accomplishments;
d. How the standard is used to keep accomplishments in line with planned results.

Such study obviously requires that the internal auditors obtain information from various staff groups such as the budgeting and planning departments.

Suggestions. Following such appraisal study, the internal auditors may be equipped to suggest how the standards in use might be made more effective for managerial control.

Possible improvements might include:

a. Furnishing the operating manager useful standards he does not now have;
b. Improving the communication of standards among those affected;
c. Improving the accuracy, timeliness and pertinence of standards;
d. Relating the standards more nearly to the operating responsibilities of each individual;

e. Improving the units of measurement in which the standards are expressed, particularly by translating qualitative into quantitative units.

2. *Reports of Accomplishment*

Turning to the second major tool for managerial control, namely information about what has been accomplished in each operating area, internal auditors make identification and appraisal studies similar to those outlined herein for performance standards.

Again the objective is to evaluate the adequacy of the tools available to each manager, by means of which he can control effectively his segment of the company's operations.

Information about past performance in each operating area consists principally, but by no means exclusively, of data developed by the company's accounting and statistical groups. For most operating areas such data constitutes the most voluminous and most continuous control tool the manager has, and, for this reason, internal auditors spend a good part of their time appraising the managerial control features of operating reports.

Appraisal Steps. As in appraising performance standards, the first step is to identify the operating area in which the particular manager actually makes decisions.

The second step is to identify the kinds of data about past performance (accounting, statistical or other; written or oral) which are available to that manager.

The third step is to evaluate each such operating report as to its value to the manager as a tool for control over the operating area where he makes the decisions.

In appraising each operating report available to such manager, internal auditors try to find out such things as:

a. Whether the data is pertinent to the manager's operating area;
b. Whether the data is gathered, classified, summarized, selected, arranged and compared with standards in such a way that the manager can tell where and why his section fell behind or ran ahead;
c. Whether they are classified so as to tell what individual was responsible for each major deviation;
d. Whether they are expressed in the same measurement units as the related performance standards;
e. Whether they are accurate;
f. Whether they are timely;
g. How the manager uses them to control his area of company operations.

Relation of Internal Auditing to Accounting and Statistics. Such study obviously requires a systematic review of various parts of the company's data-gathering and data-processing system. This review concentrates on the procedures followed in processing operating data, and particularly on the checks and balances which are built into those procedures for the purpose of assuring continuous accuracy, promptness and pertinence of the resulting periodic reports on performance.

Suggesting Improvements. Following their appraisal of the performance reports for a particular manager, the internal auditors may be able to suggest how the reported data might be made more effective for managerial control.

Possible improvements might include:

a. Furnishing the manager pertinent operating data which he does not now receive;
b. Discontinuing reports and data which are not pertinent to his operating responsibilities;
c. Changing the presentation of operating data to make them easier to understand and use;
d. Facilitating comparison of actual performance with standards which reflect current operating plans, conditions, methods and responsibilities;
e. Improving the accuracy and promptness of operating reports;
f. Substituting quantitative for qualitative operating data.

3. *Procedures*

A third major tool by which an operating manager controls the accomplishments of his section of the organization is the establishment of standard procedures, forms and working methods.

Internal auditors appraise such procedures from two general standpoints, suitability and compliance.

Suitability. When considering the suitability of the procedures established for a particular section or department, internal auditors first look to see whether they are consistent with intersectional and interdepartmental policies and procedures established at higher levels. Next they consider whether they are up-to-date and continuously adjusted to current conditions, organizational relationships and group responsibilities. Finally, they try to judge how efficient the procedures are for the purpose of accomplishing the operating goals.

Compliance. Internal auditors consider how closely established procedures are being followed in order to help the manager obtain assurance that the work is being carried out systematically according to his plans.

Scheduling of Time. Although procedures are only one of several tools of managerial control which internal auditors attempt to appraise, it is an area where they commonly spend a large portion of their time.

The reasons are:

1. Study of a department's procedures, forms and flow-of-work is the quickest way internal auditors can learn (a) what work is being done and how it relates to work of other departments (b) which members of the department's staff make what kind of decisions, and (c) what kinds of information flow into and out of the department, between the department head and the staff, and among the staff members.
2. Study of the procedures also helps to judge how sharp the manager's control tools are, by indicating (a) how well the staff members understand the departmental objectives, goals and standards (b) how well they understand and follow the established procedures, and (c) how well the performance reports which the manager receives, reflect significant variations between actual and standard performance.

Looking Ahead. The purpose of reviewing procedures is not to discover what employee made what mistake or judgment error, but rather to improve managerial control and prevent deficiencies in the future.

Following such review, internal auditors may be in a position to suggest improvements in procedures, organization or communication which will help the operating manager make sounder decisions.

INTERDEPARTMENTAL CONTROL AND COORDINATION

Partly because the various departments tend to concentrate their attention on the operating areas where they have primary responsibilities, internal auditors often find opportunities for improved control in the types of operations which cut across the lines of departmental organization. Although the control tools are similar to those used within a particular department, they operate at a higher level of responsibility because no one department has complete responsibility.

Following are a few examples of interdepartmental operations which internal auditors review to appraise the effectiveness of managerial control. For simplicity, these examples are confined to certain operating relationships between (1) the financial, accounting and statistical group, on the one hand, and (2) various other groups, on the other hand. The list indicates, for each such group, some of the areas in which the financial and accounting group customarily assists:

1. Salesmen—Efficient and sympathetic handling of customers' orders, expense and commission payments, salesmen's reports, and performance reports.

2. Shipping Department—Efficient and sympathetic scheduling of customers' orders, reporting of shipments, and handling of shipping errors.
3. Traffic Department—Cooperative routing of shipments, operation of warehouses, control over shipping delays, handling of carriers' errors and losses, and payment of freight bills.
4. Factory—Control over balancing of product quantities with customers' orders. Accurate and prompt reporting of inventories, production, labor and material usage. Helpful performance reports. Accounting for and protection of production facilities.
5. Suppliers—Prompt and accurate payment of invoices; efficient and sympathetic handling of adjustments.
6. Purchasing Department—Accurate recording of unfilled orders, efficient reporting of differences for negotiation with suppliers, reporting of requirements, and compliance with specifications and terms.
7. Receiving Department—Accurate recording of receipts and inspections, and mutual handling of adjustments, shortages, delays, and transportation claims.
8. Customers—Efficient and sympathetic handling of orders, billing, collecting, adjustment of errors, correspondence, allowances, and consumer relations.
9. Property Insurance Department—Accurate reporting of insurable values, and prompt reporting of losses.
10. Employees' Insurance Department—Accurate reporting of insurable status, and prompt reporting and collection of claims.
11. Employees—Prompt and accurate payment of salaries and wages.

The internal auditors' objective in reviewing such interdepartmental operations is to appraise managerial control at the level where such departments are coordinated. The usual method is to appraise the effectiveness of the control tools which are available to such managers, by which performance may be kept up to standard.

SOME EFFECTS OF DATA PROCESSING ON ACCOUNTING*

By B. C. LEMKE
Professor of Accounting, Michigan State University

The march toward giant business units, which has been somewhat slowed down, may go forward with increasing speed because such units are potentially more efficient to communicate relevant facts and directives very quickly and reliably through the use of a properly integrated and programmed system as described in this article.

INTRODUCTION

ALTHOUGH none of us can be certain of what the future holds, it looks as if it will not be as exciting as the present—at least, not in the same manner. It is of about the same order as sailing a ship. Several centuries ago, real adventure lay ahead as a ship put out to sea because navigation tools were primitive and few in number. But now the captain of a modern vessel may find that his most adventurous act may be to placate a rich dowager who complains about her accommodation.

Machinery brought about the change in all this, and it is machinery with which we are now concerned—one collective piece of complex machinery—the electronic digital computer.

THE COMPUTER SELLS SPEED

In brief, the computer sells speed, and speed only. Everything else that it does at present, as far as I know, has been or could be done by other machinery or by human beings, but admittedly much more slowly. That possibly things which were not done previously can be and are now being done with the aid of the computer probably means simply that the old-fashioned way took too long.

It cannot, however, be stated categorically that a computer performs a given operation more economically than an alternative means, because time as measured by the speed of accomplishing an operation must be assigned a cost or cost-saving and then brought into the comparison. Often a saving in cost takes place even when time is not of the essence, as in large payroll

* An address given at the first convention of the London Computer Group. Reprinted from The Accountant, November 3, 1956.

situations, where saving over a previously existing, "poorly-organized," alternative method is likely to be more dramatic.

Of considerably more interest are operations where speed, nevertheless, is of primary importance—where, in other words, the information must be available by a certain time in order to be useful in making a decision. If the information is not available, the decision must be made without taking into account some essential or desirable detail—which is tantamount to guessing at it. A variety of production control problems fall into this group. This "guessing at" is mistakenly frequently considered to be shrewd and skillful management, if it is reasonably correct—or poor management if it is not. A good rabbit's foot, for luck, is thus standard equipment for good management. Perhaps the reading of tea leaves as another respected method accounts for the enormous tea consumption and the frequent and ritualistic but nevertheless pleasant tea service which takes place during an executive's working day.

The computer, therefore, because of its inherent speed, is capable of yanking part of what was traditionally regarded as the future into the present. It is possible to gather, summarize, analyze, and manipulate data according to program, in order to reduce the area for the exercise of managerial guessing.

It also has the drastic ability, because of its speed, dramatically to remove the spectre, or at least push back the point of diseconomy of large-scale enterprise. Previous control methods broke down whenever a given size of a single enterprise was exceeded. This disconcerting phenomenon has been one of the factors that has made decentralization so attractive. It really isn't attractive—it is necessary at the moment. If, however, communication of relevant facts and directives within an enterprise is done very quickly and reliably through the use of a properly integrated and programmed system, utilizing the computer, then management may be able to take on or absorb under a centralized management much greater areas of business without loss of managerial efficiency. Thus the march toward giant business units, which has been slowed down somewhat, may go forward with gradually increasing speed because such units are potentially more efficient than smaller-scale enterprise, measured from the production side.

TWO PROBLEMS

All this does not spell Utopia. It means closer control over production within an enterprise, but this is only half of the problem and, in modern times, the less important half. The greater problem is sales—the disposal of the produced goods in a manner which will permit efficient production. Here two problems must be distinguished:

1. The co-ordination of production with sales, to avoid over- and under-production; in other words, the establishing of an effective inventory policy; and
2. The creation of demand for the product; the stimulation of the consumer to buy. Although we have been taught at times that one means of stimulating demand is to lower the price, this is obviously of limited value in a practical sense.

I do not view the situation as one where the consumer is hungrily waiting for the factory to produce. I am suggesting that the short-range problem is an intensive battle for markets, because efficiency implies larger physical output at lower unit costs, or, to state it more fully, lower unit costs are possible if there is a larger physical output than before. Obversely, costs pile up if output is not maintained in a highly mechanized production process.

Because the computer is a machine used internally, the public will not be aware of its use within the business unless the enterprise chooses to publicize it. The company should be in a position to render some services more quickly and accurately. Eventually the customers, suppliers, employees, and others coming in contact with the business, should become aware of some quicker and more reliable services.

The implications for accounting, with this as a background, are by no means clear-cut. It is hazardous to make predictions in the area of accounting, even for an accountant! It is the height of folly to make any statements about electronic computers because they are still largely in the development stages, in spite of the respectable age of the underlying principles, and I shall try to avoid making rash statements about machines.

Accounting has changed over the years except for certain underlying algebraic or arithmetic relationships, largely of the debit and credit variety. Conceivably, the electronic computer can change accounting principles, directly or indirectly. I don't know whether 'principles' is a good word. 'Requirements' is probably a better word, because accounting is essentially information, and the need for information changes with the times.

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Professor Lemke has recently addressed the International Congress on Automation in Paris, the London Computers Group and Society of Incorporated Accountants in London. He is on the Editorial Committee of THE INSTITUTE OF INTERNAL AUDITORS, *and is also a member of the American Institute of Accountants, Michigan Association of Certified Public Accountants and American Accounting Association.*

INFORMATION MUST BE PURCHASED

Information, however, is not free. It is necessary to purchase information just like any other commodity, and accountants must merchandise their wares at a reasonable price just like any merchant or professional group. The extent and variety of financial or accounting information required by a business is determined by the familiar equation which measures the utility of goods or services against the cost thereof. If it is priced too dearly, it will not be purchased. Some accountants complain that they have customers who are not expert, or discriminating, in their demands, but viewed objectively it is apparent that care must be exercised in the selection or purchase of information in order to avoid incurring a cost which cannot be justified.

One of the things that has enormously enhanced the importance of accounting, and therefore of the accountant, is the more or less continuous 'cost reduction' of information made possible by mechanization. Rather than reducing the importance of the accountant, machinery has made him more important because it has increased the range of wares. Machinery has speeded up the availability of a variety of attractive and pertinent information. It has been a factor in removing the contention that the accountant is largely a business historian.

What is really needed to round out the literature of accounting in this area is a study of the influence that machinery has had in the growth of accounting as a profession. Admittedly it is possible to exaggerate the importance of machinery since it is apparent that some information is necessary regardless of cost, but it is hard to visualize the accounting office without its machinery.

A closer examination of accounting, in order to appraise the possible impact of the computer, requires an examination of the accounting areas. Numerous classifications, cross-sections, or what have you, are possible, but the one I rather like for the present purpose is the 'AA and RR' grouping.

AA stands for arithmetic and assembly; and

RR for reports and review.

Maybe the first A—the arithmetic one—is not accounting, at least to the purist. Nevertheless, it is the raw material of accounting—the transactions that must be assembled according to a plan which falls within the area of the second A—assembly.

What is included in the arithmetic area are the first records of transactions together with any required computations needed to establish the extent, value, or boundaries of the transactions with customers, employees, stockholders, and the Government. These computations and determinations are independent of subsequent areas of accounting because the mechanics just

described encompass the transactions between the enterprise, as a distinct entity, and other enterprises. In this area fall such things as the initial recordings of sales and purchases with oftentimes complex discounts and charges, payroll with varied rate structures and related costs, credit transactions, taxes, subsequent tracing of material and service resources, and other varieties of transactions and changes, some of which are of a limited accounting significance.

SAVING IN CLERICAL COST

Much of the saving in clerical cost through the use of the computer occurs here: the large number of simple computations in payrolls and inventories are illustrations. In each instance there are deadlines for certain data, which, if not met, are either embarrassing—as in the case of payroll—or vexing, as in the case of inventory data. Thus speed is an essential ingredient, but speed is a relative thing, and, so far at least, it seems apparent that the electronic computer must continue to demonstrate its superiority over alternative methods of performing the arithmetic. Given reasonable volume, the superiority of the computer, costwise, is fairly easy to demonstrate in the planning stage.

The second A—the assembly area—involves the journals and oftentimes tediously detailed and exacting subsidiary ledger areas and the rather simple but important general ledger. The interrelationships of these ledgers and the journalization process that precedes them need not be gone into here. A great deal of planning has been done over the years to minimize the work in these areas, which should make the use of the computer for similar purposes rather easy to bring about—*if* it is decided to summarize and keep such records on the computer. As a matter of fact, existing methods may be considered adequate, unless tape is used on the computer to achieve a speed greater than existing punched-card processes. A further complication is the general expectation that ledger records be kept on ledger sheets with cross-references to the summaries (also on sheets) to support the accounts.

This area undoubtedly will receive considerable study in order to weigh the advantages and disadvantages of integrating these two areas—the arithmetic and the assembly—in one computer application. If this is done, some thought first must be given to the maintenance of chronological accounts—at the moment the only logical answer seems to be elastic or expandable tape, something which as yet has not appeared on the market.

The last two areas have been identified as the two Rs—reports and review. At first these two do not seem to be affected by the computer, but that is an illusion.

The report area will be seriously disturbed by the computer, unless management is not interested in reports. If management is report-conscious, or

must depend on reports to do its job, the computer should help to provide a tantalizing array of reports by offering a relatively painless way of recasting or manipulating current and historical data to fit any special circumstances with which management is faced. Management has been defined as the shrewd art of choosing among alternatives. Certainly this implies assembling as much information as possible about all alternatives, particularly those with financial implications.

TWO KINDS OF ACCOUNTING

In fact, it is easy to visualize two different kinds of accounting: one, the traditional reporting to stockholders and to the Government, including the auditor's certificate, which I have at times called an ethical accounting; and the other, an accounting for internal management purposes. There is nothing new in recognizing this split, although in many instances managerial accounting seems to have consisted largely of urging management to make use of the traditional reports. For many decisions it is undoubtedly desirable to retain the form of the conventional accounting structure but to clothe it with figures more suited to the type of problem under consideration. In some instances it may be more helpful to recast the traditional data in new forms, while in others it may be found more useful to use hypothetical data cast in unfamiliar forms.

An interesting, and I am certain an increasingly important use of the computer from an accounting standpoint is the integration of accounting into the total business picture by utilizing the vast input possibilities of the computer to receive data directly as it occurs, or, to record data initially in a manner which will make extra processing or transcribing unnecessary before it is taken into the computer. A concurrent possibility may be the breakdown of the sharp departmentalization that often exists in a business. Accounting may well find itself grouped with functions or departments that at present would be regarded as very odd.

AUDITING

The last R—review—will be limited to auditing. The separation just implied as potentially possible to an increasing extent in the reporting area already exists in the auditing field. Although public and internal auditing have decidedly different objectives, both use questionnaires, tests, sampling, interviews, and observations, to arrive at conclusions about certain aspects of the business.

If the electronic computer is used to its best advantage it will pose a problem for the auditor, because the computer makes possible the performance of involved sequential computations without human intervention. Intermediate records and summaries, associated with systems prior to the use of the computer, upon which the auditor has relied in the past for supplying

test and sampling opportunities, will be missing. If they are provided, it means that something extra is being done.

The auditor has tended to reduce his review if the application of the principle of internal check was good. In essence, this means the existence of a clever system of checks and balances, or, another way to put it, a system in which each class of transaction is broken into logical parts and assigned to effectively separated persons or departments, so that each element of the transaction is subject to at least a dual check at transfer points. But use of the computer is supposed to reduce steps and transfer points, as well as employees; if this weakens the internal check system the auditor is then faced with the necessity of increasing his auditing steps, but in doing so he is faced with a lack of intermediate summaries. The outcome may be complex.

The auditor may resort to a review of the computer program steps; a re-run of selected portions of the work; and perhaps a reliance upon random sampling. Auditors with extensive backgrounds in formal statistics, particularly sampling theory, have regarded the purposeful and intuitive sampling methods associated with present-day routine auditing as excessive when compared with the random sampling approach, as well as being unsupported by statistical theory.

A logical development is to use ratios, graphs, historical relationships, known movements of resources, and any other relevant data, to construct a model of what the business should have accomplished during the period under review and then to measure the known results against this model. In other words, to establish a pattern of auditing over-all accomplishment, somewhat similar to what is done in standard cost accounting. The audit would then be devoted extensively to a review of the exceptions uncovered in the process between actual and expected. This sort of thing is supposedly done in many audits, but it is doubtful whether it is acceptable as the only or main audit service leading to an auditor's opinion.

No prediction is being offered here as to how the audit problem will be solved, if it arises, but solved it must be, eventually, as the computer is used more extensively.

The internal auditor, because he is an employee of the company, can audit computer produced results on a test basis at frequent intervals. It may be that corporations will permit their public auditors to perform work at frequent points of time during the fiscal year rather than performing the work at one concentrated point of time. Perhaps an extension of this program will permit the public auditor to perform frequent tests similar to those available to the internal auditor.

ACCOUNTING OFFICE OF THE FUTURE

What will the accounting office of the future look like?

This is sheer fantasy, but I feel that the number of accountants will shrink, relatively speaking, because they will be hard to identify as such. Even now, many university curricula in the United States require an accounting major to have a much more generalized education than formerly. As I see it, the accountant will be the financial planning and control executive in the future, if he is not that already in the present.

Clerical workers will be persons who try to regularize the documents produced by the die-hard element among customers, suppliers, and employees who have refused to learn the latest machine-code script which the computer can interpret directly.

The programmer, now an important element in the computer field, will probably be absorbed by the companies making the pre-input and post-output devices.

A portion of the office force will be dressed in uniform: these are the electronic machine specialists. They are in uniform so that they can be recognized as such. Theirs will be the interesting job of switching between the office and the factory as needed, because the same sort of computing and control machinery will be found in the office and the factory, in part. In other words, the future will be full of surprises.

THE ROUND TABLE

Edited by DONALD T. BARBER

Every internal auditor in the course of his day-to-day work is doing many things that result in significant savings, increased efficiencies or the rendering of some special service to management. By sharing these experiences with other auditors he will help our Institute progress. One way of doing this is by writing to the Round Table. By doing this we will all be "Earning Our Opportunity."

Please send in your contribution today. Your name will be published only with your permission.

The Round Table
The Institute of Internal Auditors
120 Wall Street,
New York 5, N. Y.

* * * *

REPORT DIGESTS

In the normal course of events, an active internal audit staff in a large organization produces many reports. As time goes by, the value of these reports tends to decline. Old ones, however good, have a habit of becoming lost in the archives. The following technique is suggested as a means of preserving and prolonging their value.

1. As each report is written, prepare a brief digest of its contents, salient features and any unusual points.
2. Periodically review these digests. See if they are as valid as when they were first written. If not, revise them.
3. Once a year publish the digests of all reports issued during the year. Include a cumulative index covering all past reports.

Some significant benefits can be gained from this practice. First of all, it's good training for the report-writer. It compels him to take a bird's-eye view of his audit—to appraise more critically the intrinsic value of his report. It is a useful medium to experience him in summing up, in a few well chosen words, the content of a report that extends over several pages.

For the internal audit staff as a whole it affords a complete résumé of past activities. It is a reference guide they can use to draw selected reports

for reading. This is particularly so in the case of newcomers and those who, for geographical or other reasons, are not in close touch with the reporting activity.

For planning future programs, it provides the internal audit management with a sky-view picture of past coverage. Have they devoted a proper emphasis to all aspects of the business? Should the following year's program be modeled on these or different lines? Here, in a small document, they can make a fast and comprehensive review.

Finally the digest summary can be used as an effective public relations document for the internal audit staff. Give it a good circulation among the members of management. Let them know what you have done and what you can do. Talk to them about it. Perhaps they have ideas where you can extend your services to good advantage. Remember that you may be skilled as an internal auditor, but others, with less conventional ideas, may be able to give you hints as to where you can apply those skills to yield additional benefits.

* * * *

LAUNDRY EXPENSE--A CASE STUDY

Early in 1956 our Purchasing Department made a survey of various types of laundry services. The purpose of the survey was to find a service which would reduce the cost and improve distribution.

Based on the results of the survey a contract was negotiated. It was expected to produce a substantial reduction in cost. However, a later review showed that instead of effecting a reduction the cost under the new plan had increased from about $8,300 to about $9,800 per month. This prompted the internal auditing department to study the laundry services. The terms of the contract provide that the contractor would:

a. Supply a numbered laundry locker for each employee included in the laundry plan;

b. Provide a sufficient number of garments of correct size to fill the needs of each employee, each garment to have the employee's locker number on it;

c. Service each locker twice each week, all garments to be removed and the scheduled number of freshly-laundered garments placed in the locker at these times.

d. Submit invoices for the number of garments shown on the schedule of requirements prepared by the company. The schedule of requirements was subject to adjustments.

The audit revealed that:

a. The scheduled requirements instead of actual usage as the basis for invoicing had resulted in excessive charges of about $3,700 per month. The original schedule was not accurate and current employee changes were not reported promptly.

b. Supervisors were not familiar with the contract terms and their responsibility in reporting changes in laundry requirements.

c. During the summer months many employees do not wear the laboratory coats. Nevertheless many clean and unused garments were returned to the laundry each week.

d. The contractor was aware of the large differences between the scheduled and actual requirements. He had suggested that the company revise the schedule to bring them in line with actual requirements. Nothing had been done about this.

The results of the audit were:

a. A program was started by the Purchasing Department to inform the supervisors of the details of the laundry service contract and their responsibility for avoiding excessive charges

b. The Accounting Department now provides a comparative report each month showing scheduled and actual requirements

c. In the brief period since the audit, the excessive monthly charges have been reduced by approximately fifty percent and further reductions are expected in the future.

* * * *

COULD YOUR COMPANY USE HALF A MILLION?

In the course of an audit of the property and depreciation accounts of our company we found that the treatment of cash discount as miscellaneous revenue resulted in paying income tax on such revenue in the year the discount was taken. However if cash discounts were treated as a reduction of cost the payment of income tax on that portion of it applicable to the purchase of property items would be deferred over the life of the property.

This suggestion was adopted by our company. Our annual taxable income has been reduced by the amount of cash discount taken on the purchase of property items. This is somewhat offset by the reduction in depreciation allowance by reason of the smaller property base. If property additions remain constant in the future there will be an additional tax deferment for the next twenty years. This is the average life of property in

our company. After this time the annual tax payment will be the same as under the old method.

During this twenty-year period the total amount of the taxes that are deferred in this way will be retained in our treasury and for as long as our property additions remain constant.

We are presently earning about $100,000 cash discount each year on the purchase of property items. If this level of purchases continues the total tax deferment in twenty years will be about $500,000.

* * * *

HOW TO REDUCE FREIGHT COSTS

An alert internal auditor has many opportunities to suggest improvements in areas other than accounting and to point out possible cost savings. For example the investigation of fluctuating per-ton unit cost by one of our auditors led to a reduction in the cost of transporting coke breeze between two nearby components of our company. The railway billed a fixed switch charge for each car regardless of the size of the car switched. Although cars of a maximum capacity were available they were being used in only about twenty-five percent of the shipments, and this only because the ordering location failed to specify the largest car size. Further analysis indicated that over a twelve month period freight costs were approximately $7,000 greater than would have been incurred if all shipments had been made in the largest cars. This worthwhile saving is now being made.

L. W. Newbern
Ford Motor Company
Dearborn, Mich.

* * * *

TO INQUIRE IS NECESSARY

Most auditors have probably been asked at one time or another why they are performing a certain step or why they are asking so many questions regarding routine procedures. Although the reason for asking the questions is perfectly clear to the auditor it is often difficult to give a satisfactory answer.

Recently I was able to do this in a somewhat dramatic way. An office manager with whom I was discussing control over sales, pointed out that other auditors had not inquired into these areas. I could not help sensing a feeling of impatience and irritation on his part.

It was then that we discovered a deficiency in internal control. The purchasing officer was assigned both the duty of approving invoices for payment and agreeing purchase orders with receiving reports. The duties were reassigned to improve the control.

The office manager and I now discuss and survey internal control without any misunderstanding of the benefits to be obtained from an audit review of controls.

N. S. Mayberg

* * * *

HOW MACHINE ACCOUNTING CAN IMPROVE THE VERIFICATION OF RECEIVABLES

Prior to the adoption of a machine accounting system and the centralizing of all invoicing and accounts receivable records at our Head Office the audit verification statements sent to customers bore little resemblance to the regular statements sent to them each month. Furthermore considerable time was required in the preparation of the verification statements. This often meant a delay in the mailing of the regular branch statements. Now, however, the audit verification statement is produced by the Machine Accounting Department at the same time the monthly statement is produced. The regular four-part statement is merely changed to a six-part form. The additional two copies become the verification statement and are suitably identified both by color and additional printing.

Under the former system the verification statement showed only the balance outstanding at a certain date. As a result a great many requests were received for detailed lists of invoices and credits making up the balances. But since the present verification statement is a copy of the regular branch statement and shows all the unsettled items all the necessary details are presented at one time. This feature has resulted in much less letter writing and has speeded up the obtaining of a verification.

We are now able if we so desire to circularize all accounts at one time from Head Office. Sometimes we do this and at others we circularize the accounts during the regular audit of the branch. It should be explained that although the statements are prepared at Head Office collections are made by the various branches across Canada.

Since adopting this revised plan of audit an additional six percent of statements are returned. Our files for 1956 have just been closed. It is

interesting to note that ninety percent of the verification statements were returned.

As a final step towards maintaining complete control of the circularization of our accounts receivable a list is made for each branch of the accounts not replying to the request for verification. At the time of the next audit this list is checked for propriety.

Norman Mitchell
The Goodyear Tire & Rubber
Co. of Canada Ltd.
Toronto, Ont., Can.

STUDENT'S DEPARTMENT

Articles in these pages are compiled because of their special help and interest to students.

Edited by STANLEY J. BLAZNEK

AUDITORS CAN BE HUMAN

THE following slogan is emblazoned on police cars of a large metropolitan city—"It's nice to be important, but more important to be nice." This public announcement hasn't lessened the effectiveness of police activity, but it has had a beneficial effect on the general attitude of the people in the community toward their law enforcement agency. This is called building good *Human Relations*.

In many respects, an internal auditor's activities can resemble those of a police officer. In fact, auditors may sometimes be called policemen—in a derogatory sort of way. If such is the case, it's time for these auditors to take stock of their conduct in their day-to-day work and of their attitudes toward fellow workers.

The *Human Relations* approach of the auditor is an important factor in the successful administration of an internal auditing program. He should continually strive to improve his human as well as technical performance on the job. By practicing fairness, sincerity, and impartiality, he will not only produce a better audit job, but his relations with those whose work is being examined will show a marked improvement.

Understanding the other person's point of view is a good starting point toward better *Human Relations*. Criticism should never be offered in generalities or as a matter of opinion. Instead, criticism should be factual and concise and tempered by a full understanding of a particular problem. Clerical mistakes should never be belabored for the purpose of making a point and, above all, the auditor should never deal in personalities. Comments regarding the particular efficiencies of individuals should be reserved for private discussion with supervision, and then, usually upon specific request only. Always remember that self importance, pride, self respect, and appreciation are deep human urges to most people. Flagrant disregard for these human feelings may raise a defensive barrier that the auditor will find difficult to penetrate.

You can do a better audit job by first attempting to earn the cooperation of the people whose work is being reviewed. To do this successfully means

realizing that people are different. A good auditor knows that individuals will not always react in the same way at all times. Consequently, his approach must be based on a study of the people involved to assure proper reception of his ideas. However, cooperation is not a one-way street and the auditor must demonstrate his ability to give as well as receive. This does not mean, of course, that the auditor will engage in the spirit of good fellowship to the point where criticism will provoke an embarrassing situation. Such an unfortunate occurrence means an immediate loss of respect and the audit effectiveness is materially impaired.

Understanding and cooperation are only two of several elements which make for successful *Human Relations*. However, diligent practice of these two factors as a start will enable the auditor to improve his on-the-job performance and will lead the way for the development of other possibilities for human relationship betterment as his work progresses. It is a constant challenge to his technical and human capabilities and his success will be determined largely by the respect and good will of those with whom he works.

CASH CONTROL -- PAYMENTS

By C. FAIRBROTHER

Unilever Limited

CASH and the control of cash is important to each of us in our business and personal activities.

Procedures for proper control of payments are oftentimes overlooked when the many details of disbursements are being examined. An over-all review of the controls can be an interesting and productive function.

There are so many varying types of expense and payments that it is impossible, in the short time available, to cover them in detail. My remarks, therefore, are restricted to the general principles of payments control and the application of these principles in detail must, of course, vary according to the circumstances of the particular company concerned and the type of payment involved. Further (again due to the time factor) I have concentrated on payments by bank check as distinct from cash payments.

1. THE AIMS OF CONTROL

The first objective of payments control is to ensure that all payments have been incurred in the normal course of the company's business and have been properly authorized, and that the company has received to the full the material or services to which the payments relate.

As in the case of most systems which aim to control business transactions, the basic principle should be to spread the responsibility for various

operations involved over as wide a field as possible. The person responsible for actually making the payment should have no part whatsoever in compiling the documents supporting the request for payment or in the computation of the amount payable. A simple illustration of this is that the person who pays out wages should have no hand in drawing up the payroll.

2. THE MACHINERY OF CONTROL

Points to consider in setting up a system whereby effective control can be maintained on payments are:

a. *Authorities*

There should be in every business a list of the people authorized to accept responsibility at each of the various stages leading up to the payment of cash, *e.g.* placing an order, accepting the goods, analyzing for quality, passing the invoice, signing the check, etc. These authorities should be clearly expressed, and, where desirable, a maximum value placed on certain authorities, thereby ensuring that transactions over a certain value will come under the scrutiny of more senior officials.

For authority records, it is often convenient to have a card for each authorized employee setting out the limit of his authority and showing a specimen of his signature and initials. Copies of these cards should then be given to all interested parties and a copy kept centrally. It is to this central file that the auditor should refer.

b. *Check Safeguards*

Payments should always be made by check where possible except for the day-to-day items which can be properly classed as Petty Cash. Payments initiated by letter to banks should be avoided.

Banks should be kept informed of all alterations in authorities for signing checks. Normally it is considered advisable to have two signatories, but where the volume of transactions is very great and the system of control prior to the check stage is adequate, one signature may be considered enough up to a certain value. The bank, of course, must be informed of such limitations of authority.

The custody of checks or check books is important. Most companies now have their own checks printed by the bank, and it is

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desirable that the main stock be left with the bank and a supply drawn as required. The bank should be authorized to release blank checks only on an authorized requisition from the company.

The supply of blank checks in the office should be retained by an official other than the cashier and a record kept of the serial numbers of checks issued. Checks should be used in numerical order and any cancelled checks should remain in the book.

c. *Supporting Documents*

The official signing the check must insure that it is a properly prepared check made out from the company's official check book(s) and that it is supported by all the documentary evidence required.

Where the volume of payments is great and the work of verification against documents can be spread over several officials who take responsibility at various stages, it may lead to preparation of one summary document in support of a number of payments. If a list of payments is compiled, which is duly authorized, and from this list the checks are made out, the check signatory need only refer to the list as the supporting document. Of course, this does not necessarily mean that he never refers to the original invoices, etc., for these must be available to him for reference, but the system of control will be such that he can normally depend on the authorized list. Such a system is only possible in a large company where the work can be spread over a number of employees. In small companies the problems are quite different and, generally, a much more detailed examination is necessary by the check signatory.

d. *Cancellation of Documents*

It is important that all documents supporting a payment should be cancelled, for the simple reason that otherwise they may be used again, either in error, where you may have to depend on the supplier drawing your attention to it, or fraudulently, if, for example, an employee is in collaboration with a supplier or one of his employees. The simplest method is for each person at each stage of verification to sign or initial the document, and for the person following to ensure that all necessary signatures at that point are so appended. When the check or the check requisition is made out all documents should be stamped PAID with the date of payment.

e. *Allocation of Duties*

As mentioned earlier, in common with all other controls, the duties involved in making payments should be spread over as many officials as possible, so that fraud can only take place through the collaboration or negligence of at least two. The principal duties in this case are:

a. the incurring of the expense, *i.e.* placing the order

b. receipt of goods or service, *i.e.* signing Goods Received Report

c. checking invoice, *i.e.* to the supporting documents

d. making out check

e. signing check

f. recording in nominal and personal accounts.

Preferably these duties should be carried out by separate individuals having as little contact with each other as possible. Perhaps I can best illustrate this giving you a brief outline of a specimen system, *i.e.* the "Accounts Payable Voucher System (A.P.V.)."

3. PAYMENT CONTROL BY A. P. V.

The Accounts Payable Voucher System ensures that each payment made is directly supported by a prescribed set of original supporting documents, each of which evidences the proper fulfilment and authorization of a necessary stage in the purchase and receipt of the goods or services concerned. A chart could be made up to show that the work leading up to the dispatch of the checks by the cashier is so spread that each checking stage is simple in itself, but is superimposed on previous stages so as to ensure the accuracy of the previous work.

Broadly the procedure is as follows:

Accounts Payable Clerk:	Prepares invoices for payment by attaching copy Purchase Order and Goods Received Reports, checking detail and authorities, and initialling invoices
	Prepares A.P.V.s, *i.e.* remittance advice and a copy, List A.P.V.s on a check requisition form (C.R.)
	Cancels A.P.V.s and supporting documents with a dated 'PAID' stamp
	Receives 'PAID' copy of check requisition from check signatory.
Check Requisition Signatory:	Checks A.P.V.s to supporting documents and signs C.R.
	Returns invoices, etc., and copy A.P.V. to A.P. Clerk.

Cashier:	Obtains blank check on production of authorized C.R.
	Writes checks and enters check numbers on C.R.
Check Signatory:	Signs checks against C.R. (but can call for full supporting documents)
	Passes copy C.R. direct to A.P.V. Clerk.
Cashier:	Despatches checks to payees.

Financial control is effected by means of a Total Creditors' account which is debited with check requisition totals and credited with the total value of authorised A.P.V.s charged to expense and asset, etc., accounts.

4. BANK RECONCILIATION

So far we have been considering what happens up to the point where the payment is made. There is, however, another stage in the control of payments, and although it may be rather like shutting the stable door after the horse has gone, it is nevertheless a necessary check. This is, of course, the bank reconciliation.

For this to be an effective check it is essential that the bank statements and the returned cancelled checks are passed direct by post department to the Accountant and not to the Cashier or other official responsible for drawing the checks in the first place. This independent official should compare them with a copy of the authorized check requisitions received direct from the originator of the form (*e.g* the A.P.V. Clerk).

5. BANK RECONCILIATIONS RENDERED REDUNDANT

Now that we have emphasized the importance of bank reconciliations, it is interesting to consider how they are being dispensed with in some large concerns today, with a consequent saving in time and labor by obviating the monotonous and time-consuming job of tracing each item debited by the bank into the records of the company.

The system is that each year is divided into a number of periods, *e.g.* quarters, for each of which the bank is asked to operate a separate current account. The date on which a check is drawn governs the current account to which it will be debited. The bank clears the debits on each current account daily to a General account and notifies the company of the transfers.

The company opens corresponding Payments Accounts in their books for the same periods and credits to each the total checks drawn in the period and debits the daily transfers notified by the bank. The credit balance

on each Payments Account is, therefore, the total of the checks of that particular period which remain outstanding. There should, of course, never be a debit balance on these accounts unless an error has been made at some stage or other. Debit balances, would therefore, be a signal for immediate investigation.

HOW MODERN IS YOUR THINKING?

By H. C. M. COBB

GROWTH in scope of internal auditing to all departments of business has brought problems in definition of responsibilities and audit approach. The internal auditor who attempts to be an expert in everything is headed for trouble. The internal auditor who approaches new fields of work as an expert in general control techniques is on a much sounder footing.

The present broad concept of internal auditing is relatively new. There survives the internal auditor whose main objective is checking and whose principal area of application is in the field of accounting. But during the last ten or fifteen years, the need for closer management has become more pronounced, types of organizations have been developed for departmentalizing responsibilities, and, in consequence, forms of controls have been evolved more adequately to supervise this delegation—in particular, a central mechanism has become necessary for checking, appraising and evaluating other forms of control.

It was clear that the auditor, in the course of his checking, had the opportunity to observe all types of operations. It was not within the purview of his checking function, however, to examine these operations closely. Nor did the *expertise* required of the auditor proper provide a broad enough knowledge of management problems to permit him to undertake auditing of the managerial kind. Thus the new concept of internal auditing was necessitated by a fundamental change in ideas of management control.

Yet progress towards a widening of the scope of internal auditing from mere checking to controlling, appraising and evaluating, has been and remains slow.

In line with the evolution described, internal auditing was formerly confined to the accounting and financial departments, but it is now extending, in its wider form, to all departments. Various methods have been tried to increase the effectiveness of the new internal auditing. Some concerns are still experimenting with the system of engaging specialists, expert in the work of various technical departments, who are expected to be qualified to pronounce upon the performance of the technicians. This method has the

one salient disadvantage, that a part-time expert on the internal audit staff attempts to appraise and evaluate the work of a full-time expert in a line operating department. This puts the part-time expert in an untenable position. A more recent development is to engage men who are expert in the field of general control and who can approach the problems of technical and semi-technical problems from that angle. This type of internal auditor need have only sufficient knowledge of the technical side of the business to be able to evaluate the necessity for and the workings of the various types of controls.

Thus, the internal auditor has evolved from clerical checker to technical specialist and from that to business analyst. In this last manifestation it seems that we have reached almost the final stage in his evolution.

ORIGIN OF CONTROL

"Internal control" are two of the most heavily worked words in the accounting and auditing profession, yet the term is one about which there is almost as much disagreement as there is laxity in its use. Business has been growing more complex, like the economy of the country. When a business could be managed on a single direct-line basis, the control necessary for a proper discharge of responsibility was centralized in one or two individuals. It did not, therefore, appear as complicated, because it was direct. Growth in the size and complexity of business entailed the delegation of authority and the corresponding controls.

Organization of the business was the first requirement. The delegation of authority meant that someone had to be nominated to whom it could be delegated and that authority had to be divided so as to fulfill the responsibilities of management most economically. Much has been written on this subject and many varied opinions have been expressed on the best organization in given circumstances. This subject will not be discussed here. Suffice it to say that organization is one of the major elements of control and a integral part of any management plan.

Another of the early controls was accounting and record keeping. This informed management whether it was so operating that it discharged one of its principal responsibilities—the making of a profit. In its least developed form, accounting merely revealed the excess of cash receipts over expenditures, and this cash accounting is still used in many smaller businesses. The complex accounting of modern businesses must, however, not only furnish historical reports on the profit outcome, but also provide control elsewhere, as in the protection and conservation of assets. At the same time, it must not only exercise a current financial control, but must also establish a basis for future control through forecasts, budgets and the like. And as business becomes still more complex, policies and procedures become necessary for

controlling the delegation of authority and the manner in which that authority is exercised.

One method for applying this control is through standards of performance. These standards are established for many areas of the business. The best known of them are standard costs and budgets. These, though emanating from the accounting department, are used by many departments of the business. In addition, there are profit standards and standards for labor, both direct and indirect. The field for the application of standards of performance is a growing one and they form an essential part of the control as an organic whole. The most recent of the control media is internal auditing. This provides management with a report on the workings of the business and evaluates the adequacy and propriety of other forms of controls. This medium is becoming more important, and particularly in large companies, where it is, in effect, the balance wheel of the control program, complementing all the other forms of control.

THE ELEMENTS OF CONTROL

What are the elements of control and what are they accomplishing? In delegating its authority, management delegates its right to make decisions, and this delegation may go down to all levels of organization. Through organization, the management prerogative is translated into action, and from action into results. Basically, the controls that management institutes limit the degree of decision at any one point and, at the same time, evaluate its effects and the resulting action. Often this basic concept is not fully understood, and confusion of ideas is the consequence.

One of the elements of each form of control is the system of checks and balances with which accountants are so familiar. Many, in discussing internal control, stop with an appreciation of this system. The dictionary gives a subtle difference between checking and control, and that difference lies in the elements of direction and guidance. It is important that we appreciate that internal control goes beyond checking, and comprehends it.

Timing and degree are the essence of controls. In a practical sense, there is very little action of any kind that is not subject to some form of control at some time. The question is: when and to what extent. It is easier to say to what extent than to say when, for certainly no control is worth while if it costs more than the value of the decision or action that it controls.

HERBERT C. M. COBB *who died in 1953, was Assistant Comptroller of the Worthington Corporation. His previous position with the Company beginning in 1942 had been General Auditor. He was educated in Europe and his business experience included three years in international banking and ten years in public accounting. He was a member of the American Institute of Accountants and the American Management Association, and was International President in 1952 of* THE INSTITUTE OF INTERNAL AUDITORS.

As to the "when," subsequent checking will give a good indication whether or not control should have been established sooner. Often, answers are decided in the light of experience, often sad experience. Undoubtedly, many of the controls that have actually been installed in businesses were adopted because of losses, fraud or the like. They might have been adopted earlier, if it had not been felt that the unfortunate experience was unlikely and that the control would be too costly.

Let us consider just how the internal auditor fits into the framework of control. As has already been indicated, he now operates as a specialist on controls, as a reporter on them and as an evaluator of their propriety or impropriety, their adequacy or inadequacy. At the same time, he must be aware of the various business implications so that he can act in his capacity as business analyst. By being a specialist in controls, he is placed in a unique position: he is not posing as a specialist on any subject other than controls. Since controls are so essentially a management responsibility, the internal auditor is in effect acting as an arm of management.

Experience teaches that, while it is undoubtedly important to ascertain what mistakes were being made in various parts of the business, it is probably even more important to ascertain the reasons for the mistakes and portray their effect on its operations. Why do errors of judgment occur and what lack of control permits them to occur? An answer to this question is more valuable than a mere report that there has been an error of judgment. Management is probably aware of that itself.

Management is interested, of course, in knowing how mistakes can be eliminated in the future, or at least limited in duration and extent. It is a basic and elemental function of any control system that it assist management in its direction of the business by minimizing future errors in judgment, through adequate direction of those to whom authority has been delegated.

The natural outgrowth of this concept of internal auditing has in general aided management, enabling auditors to work in the area which is most directly helpful to it. What failures there have been were caused by the inability of the auditors to adopt the viewpoint of management and to be conscious of its various problems. They failed to grasp their opportunity to act as management representatives in the area of control.

This has been true in all various phases of management. Sometimes the fault lies in its failure to understand what constitutes management. Management is represented by many levels, from the lowest group leader up through various division and department heads to the area of top management. Really successful service to management has never been achieved except by giving adequate service to all its levels. The successful internal auditor

appreciates the problems of each level of management, and in making his reports satisfies the particular requirements of each.

As an example, assume that an audit report is being made on payroll. While top management is undoubtedly interested in knowing that the specific objectives of lower management are being carried out, it is interested in this only in a general way, while each lower level is specifically interested in its own particular problems. Top management may be interested in the repercussions of employment practices on a community; while at the division level, the emphasis will be more on seeing that the company is directly getting its money's worth for each dollar expended. This kind of reporting calls for the ability to make different evaluations for the various levels of management. The ability to do so enables the auditor to play a part in the increasingly important field of "communications" or "human relations."

One of the principal obstacles to the expansion of internal auditing has been that it has usually been confined to the larger businesses. The smaller businesses have considered themselves unable to afford to set up internal auditing as a separate function. Accordingly the benefits which it could contribute to the organization have been foregone.

In theory the advantages of internal auditing can be extended to smaller businesses, since the problems are essentially of the same kind as those in larger businesses, but so far no practical way has been found of applying this management service to the smaller concerns. When delegation of responsibilities advanced enough for the direct supervision of ownership to be no longer practical, the various forms of controls must be separated from such supervision and separated into their various elements, as already described. At such a point, the need for internal auditing becomes apparent. Just where this point lies is not known, and one of these days it will be worth while to study this problem in order to determine when internal auditing can and cannot, in general, be profitably applied. It may, however, be said that the point is reached with an organization having between one hundred and one thousand employees. The fact that large businesses have considered fit to make each individual part of the business subject to internal auditing is, I believe, adequate demonstration of the need for extending internal auditing to smaller businesses that are comparable to these subsidiary operating units in size. Some practical means of applying the internal auditing technique, within the economic and financial limitations of the smaller concerns, must be found.

In the United States, Canada and Great Britain, internal auditing is growing in government. As government has moved into the field of public ownership of industry, it has been compelled to institute adequate control, as private industry has been compelled, and this in turn has spread back

to non-industrial forms of governmental units. The scope of government—Federal, State and local—is constantly growing, and the cost of its operation is a large proportion of the total national expenditure. There is an insistent demand and an urgent necessity for control and efficiency in governmental operations. The form of government organization is gradually changing and becoming more akin to that of private industry, and the public expects that this great machine shall operate efficiently and properly.

Public accountants have made the initial contribution towards meeting this need for control in government. Review of government functions by independent auditors is useful, but it is also necessary to ensure that the administrators should improve their own control of their own operations. The result is internal auditing in government. Today it is becoming more and more important. The size of its auditing organization enables the government to attract qualified people who can institute modern internal auditing practices. I believe this trend will continue. The need for clerical checking in government will never disappear, but superimposed upon it is a growing need for business analysts to work inside the government units.

RESPONSIBILITY FOR CONTROLS

It has been common practice during the past years to centralize in the accounting and financial departments much of the responsibility for controls; this has been done because many of the controls originated in those departments. However, many of the accounting techniques have become so complicated that the accounting controls by themselves require full-time supervision, and the over-all responsibility of control has moved out of the zone of departmental responsibility into that of management responsibility. As a result, in many organizations there is a lack of over-all jurisdiction of control, except in the area of their top management. Sooner or later, this will lead to a need for the institution of a separate department for control, having responsibility for the many branches of control, of which both accounting and internal auditing are elements.

Since modern internal auditing probably embraces a wider field of operation than any other function within the business below that of top management, it seems to me that it is logical to entrust to internal auditors the responsibility for the proper appraisal of other elements of control. This fact has been recognized in some companies by the creation of an office of vice-president in charge of control, to whom accounting, budget, auditing and other control departments all report. While it is far too early yet to report that this depicts an actual trend, it is certainly interesting to note these examples, and it will be instructive to see whether they multiply.

I believe that the practical application of this new concept of internal auditing will have a far-reaching effect on the growth and significance of

internal auditing. The trend towards functional responsibility in business and in government will require similar centralization of functional responsibility for control. Internal auditors will best serve their concerns by aiming at specializing in this field of control. It is not intended that the other services of internal auditing—reporting, protecting and evaluating—should be neglected, but rather that they should be made incidental to a wider concept. Thereby, internal auditing will develop into a function which will be well-rounded and mature. As a base, there will be sound logical investigation, sound reporting of findings, and good analysis and understanding of business practices and internal controls. This will enable business to operate efficiently as it expands and grows, and to maintain control as responsibility for business decisions is delegated by top management.

At the same time, internal auditors, through their wide contacts in all departments and in all levels of the business, can help to foster improved communication of ideas. This is the science of human relations which is being recognized as such an important problem in business today and will constitute just another means by which internal auditing can serve management.

THE CHALLENGE OF FIXED ASSET ACCOUNTING

By DONALD E. GARRETSON

Chief Accountant, Minnesota Mining and Manufacturing Co.

AT a meeting of a professional accounting group recently I was asked if I knew a certain young man working at our company. I replied that I knew the man and mentioned that he worked in the Property Accounting Department.

My questioner's reaction surprised me for he seemed disappointed. As he himself said, he thought the young man had promise and he doubted if there was sufficient opportunity or challenge for him in property accounting. He was not intending to reflect on our property accounting group, I'm sure, but he was stating an all too common attitude about this field.

I disagreed with him. There is a great challenge—or I should say there are a great many challenges in the accounting for fixed assets, I see real opportunities for clear and constructive thinking and for the utilization of the technical skills of the accounting profession.

THE INVESTIGATION AND CONTROL OF AUTHORIZATIONS REQUESTS

One of the first areas that comes to my mind is one that arises before an asset is even acquired. How should a request for authorization of funds

be investigated before it goes to management for approval? How do you keep from authorizing too many projects? There are always 100 ideas—good ideas, too—for ways to spend a dollar for every dollar that is available to be spent.

And how do you keep amounts actually spent within the amounts authorized? How does management know, when it is considering a new request, whether previously approved requests have been fully expended? In other words, what is the authorized but unexpended balance?

By way of illustrating one approach, let me briefly describe Minnesota Mining and Manufacturing Company's procedures and reports which we feel have been helpful in answering these questions.

In 3M's case this starts with a cooperative study carried out by the property accountant, the engineers, the production group, the division controllers and the chief tax accountant. Any recommended expenditure is investigated as to its economics.

The new technique is thoroughly studied by the production group. The engineers and the property accountants work out the costs of the new unit. The chief tax accountant considers the tax effects of disposing of the replaced asset or the effect on state and local taxes of locating the new production unit at one city as compared with another. Every effort is made to anticipate all of the savings and all of the additional costs. Management is presented a detailed analysis of the factors—both advantages and disadvantages—involved in any project before they are asked to authorize the funds. This is true for smaller projects requiring a manager's approval as well as, for example, a new plant requiring the approval of the Board of Directors.

When an authorization request has been approved, it is assigned a number. The authorization is then broken down into job orders. For example, if the authorization is for a new building, we would have one job order for the acquisition of real estate. There would be another for construction of the building. There would be others for each of the major service units in the building—the heating plant, the air conditioning unit, the elevators, etc. There would be still others for each major production unit to be installed in the building. Finally there would be one for the expenditures to be made which are of expense nature—moving costs and so on.

On this last point let me ask this: When you authorize the purchase of a new machine, does it cover all the costs or just the purchase price? Does your authority cover, and must someone be responsible for, the moving expense, the new foundations, the new pipes and wiring, the clean-up and so on? These costs must be controlled too.

Each approved authorization is represented by a punched card containing its number, a description, the total amount authorized, and other identifying data.

Each job order is represented by a deck of cards. One of these cards is the description card showing description, a cross reference to the basic authorization number and other identifying data. There is a separate card for each charge made against the job order. One might be a charge for an invoice and would show vendor, check number, date and amount. Another might be for an issue of supplies, another for labor, and so on.

Authorized Reports

By now you can probably picture the control over authorizations and open job orders. Using tabulating equipment, reports are prepared for management showing the status of authorizations and of job orders. These reports show the description of the authorization or job order and compare the authorized amount to the amounts already spent. An unexpended balance is shown.

These reports are prepared in various detailed and summarized forms. On the reports covering larger projects, the engineers are asked to furnish an additional useful fact—that is, the degree of completion for that particular job order. Thus a job order approved for $100,000 against which $80,000 has been spent arouses no management interest until the additional fact that the job is only 50% completed is shown. Then management interest *is* aroused and action results.

THE CHALLENGE OF SOUND PROCEDURES

A more general challenge might be mentioned. That is the problem of developing procedures to handle the volume of detail inherent in fixed asset accounting work. It is the problem of developing procedures that are efficient and not too costly, yet which at the same time do not sacrifice good internal control. It's a real test of accounting knowledge and skill to develop procedures which have the flexibility to serve all of the many purposes for which property data can be used. In our case, as I have said the accounting is done on tabulating machines. The specific techniques may have no application in your business but, again, I hope the approach may be of interest.

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Specific Identification of Assets

As every completed job order is closed to the fixed asset account, it is broken down into separate units of equipment and each is assigned a number. The number is put on the equipment with a brass tag. For each unit there is prepared a punched card showing the number, a brief description, the location and building, and the department or burden center in which it is used and to which depreciation will be charged.

A specific identification record of property requires continual adjustment to keep it up to date. In our case, branch and factory personnel do this by submitting simple transfer and disposal reports whenever an asset is moved. When the property accountants receive this information they withdraw the card, indicate on it the new information and send it through the key-punch unit. The new card is refiled, and the transfer is recorded on the general ledger by means of a voucher also prepared on IBM.

A sale or scrapping of an asset is reported on the same form. But here it's important to emphasize the planning and study that takes place *before* the disposal takes place. The property accounting group gets into such transactions before the decision is made. They have been alerted to the important tax implications of disposals of assets.

Before the disposal of any asset of large value is made, the property accountant consults with the chief tax accountant. If the asset is to be sold for more than its net book value—that is, to be sold for a profit—it can be treated as a capital gain under Section 1231. However, if it must be sold at less than net book value there is an important tax consideration. It may be more advantageous to scrap the unit rather than to sell it. By scrapping it there is an ordinary loss whereas by selling it the loss will be netted against capital gains. The tax savings of having ordinary loss may exceed the proceeds of the sale.

The recording of a disposal, when approved, is relatively simple and a voucher records the gain or loss in a separate account. With the information available, it is a simple job to analyze the profit and loss account to arrive at the breakdown by long-term, or short-term or by ordinary losses.

We have a control over the accuracy of our detail in that physical inventories of fixed assets are taken annually on a rotating basis. The inventories are done by property accountants. Prelistings of the assets are furnished to speed up the work and facilitate investigation of missing units.

Pennyless Accounting

You might be interested in one feature of our property accounting, namely, that it is now on a "pennyless" or round dollars basis.

There was a particular application that the accountants wanted to put on tabulating equipment. This was the computation of depreciation at the year-end. To do this they needed more card capacity. We have a number of value columns in our cards, so by dropping two digits from each of these, a significant addition of card capacity was achieved.

In addition to recurring savings of cost in processing data during the year, we were able to compute depreciation and prepare what we call our depreciation schedule at year-end on tabulating equipment. This job took over 270 man-hours of work a year ago. This year the machines computed the depreciation, prepared the schedules on multilith stencils and balanced the whole affair in a few hours.

THE BIGGEST CHALLENGE—USING PROPERTY DATA

The real challenge in property accounting—in fact in all accounting—is that of seeing that the information available in the records is serving the needs of management.

I won't go into the most important function of property accounting, which is the calculation of depreciation and the allocation of this expense to the proper departments and commodities. This is a real challenge, but because of its significance in most companies, it has received far more competent discussion than I am qualified to offer. I'd rather touch on one phase of usefulness that is perhaps less well explored. I am speaking of the service which may be rendered to an insurance department in ascertaining the insurable values at risk. Let me describe briefly how this is done.

Our property records are, as I've mentioned, all in tabulating cards. This mass of detail originates with, or is derived from, the basic sources of accounting records such as invoices and journal vouchers. Thus, from the cards we can determine total original cost and the net book values; but they of course are of little use as such in determining insurable values.

They do, however, provide the basis for computing insurable values. The records are so designed as to permit the accumulation of the assets by year of acquisition. By applying cost indexes to the original costs, it is possible to estimate the replacement values of our plant and equipment. Then, by adjusting for insurance depreciation and for non-insurable values (excavations, underground piping, etc.), we can determine the insurance coverage required.

These cost indexes are developed each year by the property accountants through reference to statistical publications and after consultation with the Purchasing and Engineering groups. The indexes used vary, depending not only on the year of acquisition and broad class of asset, but also depending

upon the specific type of asset within a class (an obvious example would be a brick structure as compared to a frame building).

As a result of the above methods, we feel there is little likelihood of our being significantly over or under insured. But having adequate insurance coverage is not the whole story. Adequate coverage doesn't necessarily mean full recovery in the case of a loss. The property records must be of a sort which will support an insurance claim.

In our case, the method of arriving at the values we use for buying insurance have been reviewed with our insurance carriers. We know, and we have satisfied them, that our records and values constitute a good insurance claim. Those records have meant dollars and cents in achieving full settlements for our insured losses. They have paid for themselves many times over.

There's another insurance aspect here that I might mention in passing. What happens if property records are destroyed along with the insured property? Preparation of a complete claim in such a situation would be impossible. In our case we have duplicate superseded data through the last prior year-end stored in a separate location. In addition, the card detail for transactions since the last prior year-end is stored in an area separate from the basic records being used day-by-day. We haven't had occasion to ever have to use these duplicate records. If we do, the very nominal cost of storing them will be more than paid for.

SOME UNSOLVED CHALLENGES

I have perhaps drawn too heavily on 3M's experience in illustrating the interesting problems in property accounting. I have done so because of my personal familiarity with this experience rather than because of any claim we make to having had unusual success. Certainly we haven't solved or even recognized all the problems in this field. Some of the phases I've mentioned don't work as well as we'd like them to. And we have our share of unsolved problems too.

One of these is the follow-up of the savings promised when a particular authorization is requested. Our requests for authorizations contain promises that the new unit will save numbers of dollars, produce more units, or pay for itself in 1½ years. Sometimes these savings aren't evident in the profit and loss statement. There may be good reasons for this—for example, other costs may have risen without selling prices having gone up. But it may also be that the expected saving has not been realized. We should know which. We have recently established a policy requiring that an accounting basis for the measuring of anticipated benefits be spelled out in the request for funds. Quarterly reports comparing the actual results with the expectations are to be prepared until they have been fully realized.

Like every other company we have our problems with the changing value of the dollar. Balance sheet values for different operations cannot be compared. Return on investment comparisons are distorted. Our depreciation charges are not in line with replacement values. I don't want to discuss the pros and cons of writing up assets, depreciation on replacement values, and so on. I do want to point out that these are problems—largely unsolved—calling for sound, creative thinking on the part of men engaged in this field.

THE OPPORTUNITIES THAT EXIST

I have been touching on problems in the field of property accounting almost at random. Some have been big ones—others less vital. There are many other phases I haven't even touched on. My purpose has been to try to point out that there is a tremendous opportunity for the exercise of clear and constructive thinking in this field. There are chances—

To serve management in approving and controlling authorizations

To improve the effectiveness of an insurance program

To save tax dollars

To control assets of a very significant value

To improve the usefulness of departmental or commodity operating statements

And to accomplish all this with flexibility and efficiency and good internal control.

But let me try to put these thoughts of mine into their proper and I think, broader perspective.

What I have been trying to do is *not* merely to persuade you that there is a challenge in property accounting. Most of us are not directly engaged in this field.

Really what I've been trying to say is that we shouldn't let ourselves slide into the pitfall of thinking that we as auditors, or controllers, or treasurers, have a monopoly on the challenges in the field of accounting. *Every* phase of accounting has its challenges and opportunities. Our work will be easier and our companies will profit if we stimulate interest in the specialized phases of accounting by pointing to those challenges and opportunities rather than deploring their tedious detail or lack of future.

ARTICLES OF INTEREST TO INTERNAL AUDITORS

Subject: CONTINUOUS CONTROL

By: Arthur C. Suhrbier, Assistant Auditor, Continental Illinois National Bank & Trust Co.

Published in Auditgram, March 1957

In banks, the internal auditor must be constantly alert to the possibility of fraud. Effective control lies in continuing procedures that include adequate organizational and operational checks and balances, and assurance that these procedures are maintained. With proper procedures, "errors of commission or omission are detected by employees in performing their regular duties."

Mr. Suhrbier describes the manner in which continuous controls may and should be embodied in the normal operations of the various departments of a bank. When this is done, the auditor's responsibility is to analyze efficiency and effectiveness—to see that controls are working as they are intended to work—and that the bank, its customers and its employees are properly protected against error, loss and fraud.

Subject: GUIDES TO INTERNAL PROFIT MEASUREMENT

By: Gordon Shillinglaw, Assistant Professor of Industrial Management, Massachusetts Institute of Technology

Published in Harvard Business Review, March-April 1957

The opening example in this article describes how two staff executives independently developed profit performance in one operating division of a company. Using identical accounting information, one came up with $1 million profit; the other indicated a $2 million loss. From this, Mr. Shillinglaw goes on to discuss the necessity for developing measures of profit performance for decentralized operations. Profit centers must be established and separated so that performance measures may be used by managers in their day-to-day decisions—and may help top management in the appraisal of their work.

Of various concepts, net profit is least useful; contribution margin is often inadequate; sales margin may be satisfactory; and controllable profit is perhaps the most useful of all.

In the discussion, consideration is given to service centers, profit centers and the usefulness and adaptability of various types of profit measurement. Under the headings "Recording Costs," "Cost Analysis" and "Transfer Pricing," detailed consideration is given to the effect which various policies of accounting will have on the developed profit figures and the degree of meaningfulness of the resulting figures.

"The problems of designing an accounting system that will measure controllable and incremental profits are not insignificant, but they can be solved. To solve these problems we may have to violate some established accounting conventions. In effect, we must set managements need for internal information ahead of the need for published financial statements."

Subject: MAKE YOUR STAFF PAY ITS WAY

By: Edward C. Schleh, Schleh Associates

Published in Harvard Business Review, March-April 1957

The orthodox philosophy of staff and line organization requires that the staff provide ideas and that the line have full credit for accomplishment. A major difficulty in this advisory concept of staff organization is that management often does not feel sure that the staff is not being wasted—particularly when cases arise where line managers who use the staff fail, and others who brush off the staff are successful.

As Mr. Schleh points out, line men will ask about the staff man "What's he trying to do? What's he supposed to do?" As a solution, it is proposed that staff men be assigned responsibility for *specific end results*—and not merely *activity*. For example, instead of the advertising man being held solely accountable for developing the advertising and display activity of the sales department, he should be held accountable for producing additional sales through the money that he spends.

To do this runs the risk of staff-line conflict. It is proposed that this be minimized by giving "double credit" to both for end results, by having staff personnel report to the lowest line official possible, and by assigning a limited sphere of authority to the staff. "In his own limited specialty, the staff man's word should hold unless proved wrong by the line man."

The author believes that such an approach is well worth consideration as a means (1) of controlling staff and line relationships, (2) of making most effective use of staff and (3) of putting emphasis on high technical staff ability with reduced need for staff men to be super-salesmen and super-politicians.

Subject: INADEQUATE DEPRECIATION IN THE METALS MANUFACTURING INDUSTRY

By: Wilbert A. Walker, Vice-President & Comptroller, United States Steel Corporation

Published in The Controller, December 1956

Mr. Walker's admonition to members of the accounting profession is to review, most critically, their attitudes towards accounting for depreciation. The wartime inflation (World War II) has not been followed by offsetting deflation; on the contrary the inflationary trend has continued.

This article describes the problem of providing adequate reserves for depreciation in the steel industry over a 25-year period.

Illustrative charts show the rate at which specific fixed asset cost increases, and the extent to which depreciation on the historical dollar must be multiplied to recover constant purchasing power for a number of representative items of equipment purchased at various dates. Other charts show the number of times by which net book assets must be multiplied to equal sales in each of forty-one manufacturing industries and the ratio of gross property accounts to sales in a number of individual companies.

The dollars of today and those of yesterday are not the same thing. Mr. Walker points out that very little is being done to develop acceptable accounting principles or devising systematic procedures which will inform management of the present-day cost of the facilities which are being consumed.

The fact is that every day companies are getting closer to a situation of depreciation deficiency which will become worse as accelerated amortization on defense facilities runs its course.

Mr. Walker gives tentative suggestions for lines of inquiry, investigation and experiment open to accountants.

For example, one way is for engineers and accountants to collaborate in preparing estimates covering the amount of capital expenditures required to "stay even" in the years of the immediate future.

"As members of the accounting profession we have a considerable opportunity and an even greater obligation to review most critically our attitudes towards accounting for depreciation."

Subject: **THE INTERNAL AUDITOR'S DUTY**
In Relation to the Presentation of Information to Management

By: **Reginald A. Reid, Phillips Electrical Industries**

Published in The Accountant, February 23, 1957

Mr. Reid takes care in discussing first in this article two words in its title. They are the words "duty" and "information." He suggests that management must be made to realize that the internal auditor because of his function, has a right to his opinion. Therefore the internal auditor's "duty" is a moral obligation which must govern every situation and every aspect of his work in a company.

In commenting on "information" Mr. Reid notes that auditing in the main is based on the verification of facts presented in internal accounting statements. The internal auditor's duties should go further than that and include the audit of the opinions of the chief accountant as far as they are revealed in the auditor's examination of the figures.

For example, this "information" to management could be used in relation to forecasts of future operations; in such case, the word "appraise" applies rather than "audit." Mr. Reid outlines techniques to accomplish these broad functions of the internal auditor, and discusses the duty of the internal auditor to review the ways and means by which information, particularly that of a financial nature, is presented to management.

In the normal exercise of his responsibilities, an internal auditor keeps management informed about the efficiency of internal controls. To do this job properly he must do all that he can to insure that management gets the kind of accounting information which the auditor, because he has established his right to his own opinion, believes it should have.

He must always do no more than recommend . . . in this field, his success probably depends more on his qualities of tact and good judgment than on his professional skill as an auditor."

Subject: THE AUTOMATED FUTURE

By: John Diebold, John Diebold Associates

Published in Auditgram, April 1957

The inclination to think of automation in terms of machinery and trained technicians only, is an approach that is but a part of the whole. It is this approach, Mr. Diebold relates, that curbs automation and may limit the total results to the present partial value. He contends that the hardware (necessary as it is) should fit into the business—not the business into the hardware. Total reliance on "outside" specialists (necessary as they are) is a mistake. It is better to train a company man—familiar with the business—to automation machinery than to train an outside engineer in the inside knowledge of the business.

The problem of gaining the true value of automation, therefore, starts in the thinking and performance of management. To integrate all the separate stages of the production process into a single smooth-running system is the basic step and is management's job. "Though the most limiting problems hampering the development of automation in industry today are technical, in the office they are managerial."

Mr. Diebold discusses the reason for the present limitations and gives suggestions for working toward the goal of true automation under such subject headings as "Few Trained People," "Does Equipment Fit Systems," and "Automation Stereotyped."

Under the concluding title, "A Question of Education," he gives examples of the benefits to be derived when the challenges of automation are met successfully.

Subject: SYSTEMS PLANNING FOR COMPUTER APPLICATIONS

By: Howard S. Levin, Consultant for Ebasco Services, Inc.

Published in The Controller, April 1957

Even though current office activities may not supply the perfect information that is required for policy guidance and day-to-day operation of a business, they do provide a starting point for redesigning a business information system. With this as a basis, Mr. Levin discusses information engineering and its focal point which is the discovery of information requirements and evaluation of alternative procedures for meeting them.

"The design of a business information system is a creative undertaking," as Mr. Levin puts it. There are step-by-step guides which he has outlined under the headings—"Reviewing Present Procedures"; "Defining Uses of Information," "Selection of Equipment," "Systems Implemention." Emphasizing that there are also other fronts in this battle for more effective business operations, Mr. Levin goes into the subjects of "Operations Research" and "Management Science" as related to computer planning.

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